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LECTURES ON MEDICINE

A HANDBOOK FOR NURSES

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Some readers may consider that the subject-matter of these lectures goes to some extent outside the requirements of a nurse, and is better adapted for the student or practitioner. I do not share this view. A nurse's training includes lectures on anatomy, physiology, materia medica, bacteriology, etc., all of which form the ground-work for her practical training. It has always seemed to me advantageous, alike from the patient's point of view and the doctor's, that the nurse should have a more thorough training in medicine than is possible in a short course of lectures, and my experience has shown me that the more completely nurses are equipped in this direction, the less likely are they to exceed their legitimate sphere of work.

No attempt is here made to cover the whole ground of medical nursing. My aim has rather been to extend the knowledge of the nurse in such a way as to secure in the highest degree her intelligent and effective co-operation in the management of her patients, and to be of as much assistance as possible to the physician in the investigation of the numerous diseases which through lack of knowledge are at present treated empirically. The intelligent co-operation of the nurse is of much value to the physician in any investigation he may undertake with the object of increasing our knowledge of the causation of disease, and so increasing our power of treating it.

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CLINICAL LECTURES FOR NURSES

CHAPTER I.

DISORDERS OF THE DIGESTIVE SYSTEM

INDIGESTION.

(*Syn.* Dyspepsia.)

Indigestion should never be regarded as a disease but as a symptom, and careful investigation is at all times desirable to ascertain the cause of the "indigestion." Many people suffer needlessly from prolonged symptoms of indigestion, and are treated empirically by various "stomach" medicines without benefit, when an adequate investigation would prove that the symptoms of indigestion are not dependent upon any primary derangement of the stomach, but are due to disease in another part of the digestive tract, or even to some general constitutional condition such as tuberculosis.

Indigestion manifests itself in many ways. There may be loss of appetite and disinclination for food, or, more rarely, the appetite may be abnormally good, not being satisfied even by a large meal. A sense of weight and discomfort even amounting to pain after food are common symptoms; this may occur immediately after food or from one to two hours after the meal. Eructations of gas and fluid of an unpleasant sour character (water brash) and vomiting are met with in varying degrees. Distension of the abdomen and flatulence may be the chief complaint. A varying degree of general asthenia, often pronounced, possibly with some loss of weight may complete the picture.

On what do these symptoms usually depend ? Undoubtedly in their simpler forms symptoms of indigestion are dependent on a slight degree of gastric catarrh, associated with injudicious feeding, irregularity in meals and hurried eating, often combined with constipation. The recognition of these causes and their correction will speedily effect a cure, little being necessary in the way of special medical treatment. It is, however, specially important to bear in mind that symptoms of chronic indigestion are very commonly due, on the one hand to disorders of the digestive tract below the stomach, and on the other to certain constitutional conditions ; and under modern conditions adequate investigation, including careful examination of the stools, and the use of bismuth test-meals, may be necessary to establish an accurate diagnosis. The more important of these conditions are as follows :—

A. Focal Disease.

1. Disease in the appendix region is a frequent cause of what is commonly called chronic indigestion. This takes the form of some chronic focus of mischief in the appendix, often associated with adhesions, which interfere with the free passage of the food, inducing marked stasis in the ileum with resulting fermentation and absorption of toxins. This condition has been termed appendicular dyspepsia.

2. A gastric or duodenal ulcer is a frequent cause of chronic indigestion. The symptoms and physical signs present in cases of ulcer vary widely, and unless a thorough investigation is made, the real nature of the condition is overlooked, the condition being regarded merely as a case of "indigestion." Such cases are often associated with marked dental sepsis and pyorrhœa, and not infrequently with an excessive secretion of acid in the stomach (hyperchlorhydria).

3. Severe chronic constipation, unattended by any disease in the appendix region, is also a frequent cause of symptoms of chronic indigestion, the symptoms being due in great part to a dragging on the stomach and small bowel, from a chronically overloaded and displaced large intestine. The X-rays have special value in the diagnosis of this condition.

4. Gall-stones are a not infrequent cause of chronic indigestion; the attacks of pain are, however, less severe than those usually present in pronounced cases of gall-stones.

5. Some local affection of the uterus or ovaries is sometimes the origin of the indigestion, and in all cases careful attention must be directed to the condition of the pelvic organs.

B. Constitutional Conditions.

Of constitutional conditions the more important are tuberculosis, anæmia, cancer, chronic Bright's disease, and diabetes. A troublesome indigestion, more especially in young subjects, who are pale and out of condition, is very often due to incipient tuberculosis, the symptoms being really due to a tuberculous toxæmia.

It will be seen from the above that strictly speaking there is no such thing as the treatment of indigestion. What we must attend to is the treatment of the condition which is causing the indigestion. This necessitates a thorough investigation, in the course of which much assistance of value may be obtained from the careful observation and assistance of a skilled nurse.

The following case may be taken as a typical and instructive example of "indigestion," of appendicular origin :—

This young married woman suffered from indigestion for the past four years, during which various treatments had been tried without lasting benefit. Her chief symptoms were vague abdominal discomfort, with occasional attacks of pain which bore no distinct relation to food, want of appetite, flatulence, and a marked general weakness. For the past two years she had felt quite unfit for ordinary domestic duties, making her life a rather trying one both for herself and her husband. At times she looked in fairly good health, which suggested to her doctor and her friends that she was "neurotic." On admission she was pale, thin, and of rather unsatisfactory colour. The abdomen was a little full, and occasionally some tenderness on pressure was observed in the epigastric and ileocæcal regions. The bowels were constipated and the stools were markedly offensive. X-ray examination revealed marked stasis in the ileum and colon. The case was clearly one of appendicular indigestion with a resulting condition of neurasthenia, this diagnosis being confirmed by operation. There is good reason for thinking that the complete freedom of symptoms afterwards established by the operation will be permanent; special attention to the action of the bowels was essential to complete success.

CONSTIPATION.

(*Syn.* INTESTINAL STASIS.)

Constipation is one of the commonest and most important disorders occurring in every-day practice. It implies defective action of the neuro-muscular mechanism of the bowel, as a result of which the contents of the large intestine are retained too long, thus allowing of the absorption of toxic products into the system, and inducing the phenomena of auto-intoxication. We will refer, firstly, to the general conditions which result from constipation, and, secondly, to the local conditions in the digestive tract which predispose to it, or which are brought about by its presence.

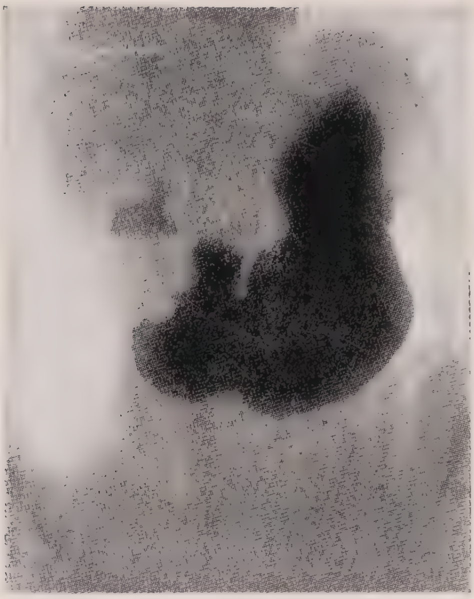
(*a*) General symptoms of ill-health arising from chronic constipation.

These are of the most varied kind. A remarkable degree of tolerance is exhibited by some people to constipation. Occasionally we meet with cases of fairly aggravated constipation where the patient feels and looks in good average health. This is explained in two ways. In the first place these patients have a high degree of resistance against the poisons, no bad effects being revealed until that resistance is overcome, as it will be sooner or later ; in the second place immunity to symptoms in certain cases of constipation is probably due to the fact that the lining membrane of the bowel is still intact and is free from catarrh. Sooner or later, however, a certain degree of catarrh is induced, which allows of the much more ready absorption of poison, the symptoms of auto-intoxication becoming thereby very evident. As a general rule, however, constipation involves ill-health and is very often of a serious kind. The more common clinical conditions arising from chronic constipation include the following :—Chlorosis or simple anæmia in young subjects, anæmia of so-called pernicious type occurring in adults, rheumatism and rheumatoid arthritis, neurasthenia, and chronic indigestion. All of these symptoms arise primarily in most cases from chronic constipation. Intestinal stasis undoubtedly also plays a part in inducing other common diseases, such as arteriosclerosis and chronic renal disease.

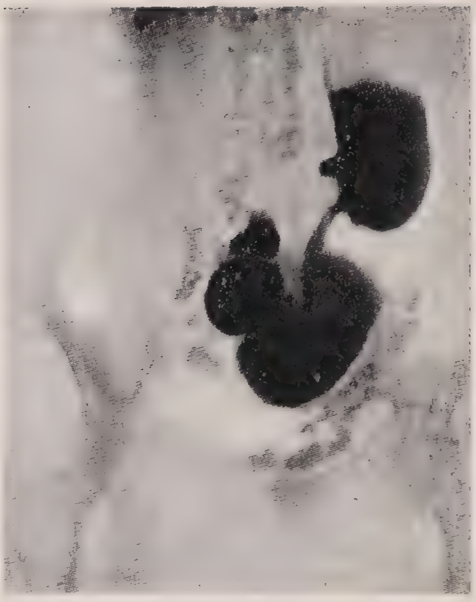
(*b*) The local conditions in the digestive tract associated with chronic constipation.

It is important to realise that the underlying fault in chronic constipation may lie in the terminal part of the ileum, the ascending colon, the rectum, or in the intermediate transverse or descending colon. In many cases the defect is general, involving the whole bowel. Probably the most common part first to be affected is the cæcum and ascending colon, the stagnation or stasis in this portion of the bowel being very often associated with stasis in the terminal portion of the ileum. This ileal stasis, according to some authorities, is the most important and primary disorder. X-ray examination, after a bismuth test-meal, is invaluable for giving precision in diagnosis, both with regard to the part of the bowel first affected and as to the exact cause or causes.

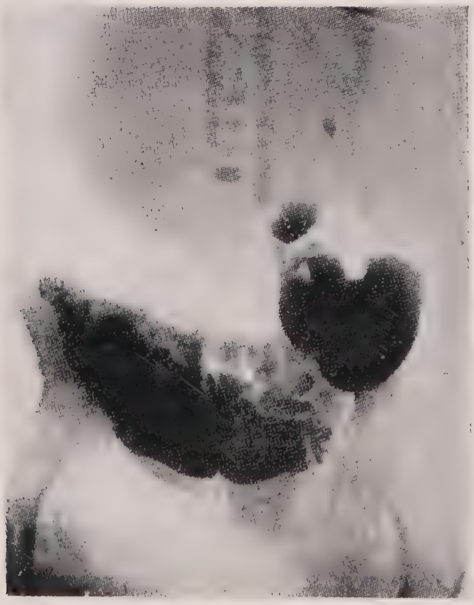
When a case of chronic constipation of moderate severity is examined with the X-rays, it will be found that there is a remarkable degree of slowing of movement of the bismuth contents through the bowel. In



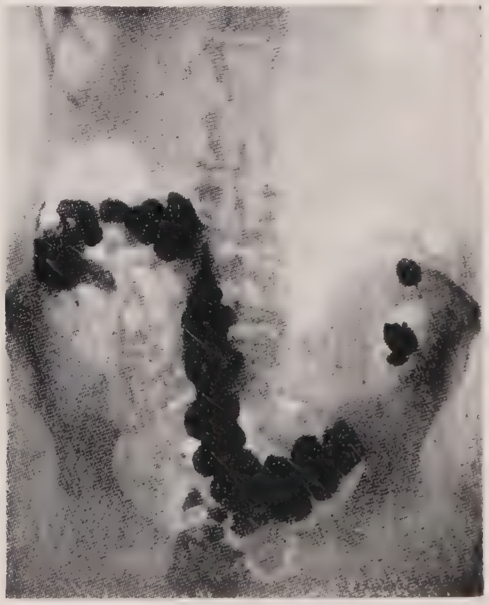
1. Stomach after ingestion of bismuth meal. Note the shape and size of the organ, which is here somewhat enlarged and atomic.



2. Stomach one hour after ingestion of bismuth meal—hour-glass contraction of stomach. Note the narrow constriction between the two parts of the stomach, due to cicatrisation from old ulcer.



3. The caecal region six hours after bismuth meal. Showing retention of food in stomach (gastric stasis), and also undue delay in ileum (ileal stasis). Note that the stomach is displaced downwards. None of the bismuth has yet passed into the large bowel.



4. Large intestine forty-eight hours after bismuth meal. Shows marked delay (stasis) in transverse colon which is also elongated and markedly displaced downwards.

To face p. 7.

health, when a bismuth meal is given at ten o'clock in the morning; two-thirds of that meal should be in the cæcum and ascending colon in six hours. In twenty-four hours the bismuth should have largely disappeared, or a little only left in the rectum or descending colon. In cases of chronic constipation, on the other hand, at the end of six hours a marked degree of ileal stasis is frequently present, little or none being beyond that point (Fig. 3). After twenty-four or forty-eight hours the cæcum or transverse colon may still be full, some of the bismuth having now reached the descending colon and rectum (Fig. 4). A similar condition may be present after seventy-two hours or longer.

Much depends, as I have indicated, on the severity of the condition, and on which part of the colon is primarily affected. In all long-standing cases there is usually associated a dilatation of the affected part of the colon, and also a displacement of the bowel. Thus it is common to find the transverse colon very much proptosed, the middle part of the transverse colon may even lie in the pelvis (Fig. 4). This displacement of the colon is in turn a complicating factor as it further increases the difficulty. Not infrequently there are also adhesions extending from the colon to the abdominal wall or from one part of the bowel to another, and the effect of these adhesions is to still further increase the stasis.

Before discussing treatment reference may be made to one or two further points of importance. It should be kept in mind that marked constipation may be present, even when the bowels move regularly—but inefficiently—every day. Intercurrent attacks of slight diarrhœa are not infrequently met with in cases of aggravated constipation, and may indeed be almost symptomatic of the condition. A distinct sluggishness of action is often present in women for a day or two prior to menstruation, and is still more pronounced as a rule in pregnancy.

General Treatment.

Before the treatment of any given case can be laid down, it is essential that an accurate diagnosis be made as to the part of the bowel chiefly affected, and as to whether there are any local contributory causes, such as adhesions, which might possibly prejudice the success of purely medical measures. The use of charcoal to colour the stools is a simple means of testing the rate of intestinal movement ; if it remains in the stools beyond forty hours a corresponding degree of stasis is present. It is by no means uncommon to find subjects of constipation who have the greatest reluctance to taking any drugs, for fear of permanent harm to the bowel being induced. This idea is ill-founded, and much greater harm to the system results from the neglect of the bowel, than from attention to its function by the judicious use of aperients. At the same time we must remember that purgative remedies are palliative and not curative in their action, and it is always advisable to attempt the cure of the condition. This is readily effected even in obstinate cases if time and trouble are taken, and massage and physical exercises are applied under skilled direction. At the outset it is frequently necessary to have recourse to soap and water enemas, often combined with the judicious use of olive oil. The introduction of 8 to 10 ozs. of olive oil, followed in half-an-hour by an enema of soapy water

—2 to 2½ pints—may suffice to clear out the bowel. Frequently, however, the enema has to be repeated for days before the bowel is effectually cleared. There are many points of detail in the subsequent management of these cases which must be attended to if a cure is to be obtained. These are here summarised as follows :—

1. It is advisable to cultivate regularly daily evacuation by morning visits. This is of the first importance. Neglect of this salutary habit plays an important part in the development of the trouble.

2. A tumbler of hot water sipped slowly in the morning during dressing is useful in exciting the reflexes which regulate intestinal movement.

3. Meals should be taken at regular intervals and masticated thoroughly. Special care should be directed to seeing that the condition of the teeth is thoroughly satisfactory.

4. Many patients find that certain articles of diet have a useful laxative effect, more especially when taken in the morning, such as fruit, marmalade, or other preserves. Oatmeal, brown bread, and green vegetables have a useful effect, on account of the relatively large amount of " ballast " formed from them. It is desirable to keep in view the importance of taking an ample supply of fluids, especially between meals.

5. Drugs.—Drugs are useful for the relief, rather than for the cure of the condition. For habitual use, the best remedies include figs, *e.g.*, syrup of figs ; prunes, *e.g.*, in the form of a prune paste (prunes,

senna, and ginger), senna, *e.g.*, senna pods. These are simple vegetable tonics or mild laxatives. As useful lubricants, special value attaches in many cases to the use of paraffin or petroleum and agar-agar, of which there are many preparations on the market. Drugs which excite peristalsis include cascara, nux vomica, aloin, and these are given in tonic doses twice or thrice daily. Calomel and euonymin are useful as combined hepatic and intestinal stimulants. Any tendency to undue griping is relieved by the use of small doses of belladonna. In certain cases a morning saline is the best remedy, more especially in adult and later life.

6. Some simple muscular exercises, and more especially exercises adapted to strengthen the abdominal muscles and promote a free natural movement of the diaphragm, are of the very first importance. Five or seven minutes' devotion to this once a day is an excellent investment for health.

7. Massage applied to the spine and to the abdominal muscles, especially combined with a course of active and passive exercises to restore the tone of the abdominal muscles, vessels, and nerves, is the most important remedial measure in our possession. This involves at least half-an-hour's treatment daily, and requires to be continued for a few weeks if the constipation is to be cured.

GASTRIC ULCER.

Epigastric pain aggravated by food, vomiting, and hæmatemesis, occurring in a young person, especially a female, constitute the leading features upon which the diagnosis of gastric ulcer is made. The condition is usually associated with pronounced constipation and anæmia, the former being the most important factor in the development of ulcer. There are great variations in regard to the incidence of the various symptoms; occasionally there may be no symptoms, the first indication of an ulcer being a perforation, but the diagnosis of the condition is as a rule an easy matter. A simple erosion of the stomach, however, may give rise to all the symptoms of gastric ulcer without the antecedent history. The symptoms of duodenal ulcer are referred to in a separate lecture.

The following two cases may be cited here, which illustrate well the different stages of gastric ulcer. One patient was admitted extremely ill and pulseless after a very severe hæmorrhage from gastric ulcer; the other one, now convalescent, with a typical history as follows:—

Girl, aged nineteen, began to complain about two years ago of symptoms of indigestion, and more especially pain in the epigastric region coming on soon after food, the pain being of a burning character and passing through to the back. These symptoms lasted for three weeks and were followed by the vomiting of blood. After a few weeks' rest and treatment the patient recovered, and remained well until a few days before admission, when she suddenly felt sick, complained of pain in the stomach, and vomited two large basinsful of blood. The bowels have been constipated. On admission the patient was blanched, the pulse was quick and weak in character, and the stools contained blood in large quantities. The patient was ultimately discharged feeling and looking very well, with no symptoms or physical signs of digestive or other disorder. This patient illustrates the liability of the condition to recur.

Course and Termination.

(*a*) Recovery.—By far the greater number of cases recover.

(*b*) Perforation.—About eight to ten per cent. of cases perforate. This more frequently occurs in cases in which the symptoms are latent, the onset being characterised by acute agonising pain in the abdomen, collapse, fall of temperature, extremities cold and bathed in sweat, with a weak thready pulse and shallow breathing.

(*c*) Cicatricisation.—In a few cases the subsequent contraction of the scar of the ulcer with, it may be, adhesions which have developed in association with it, produces chronic trouble, sometimes associated with hour-glass contraction of the stomach (see Fig. 2).

(*d*) Chronic progressive ulceration.—In some cases, owing to an excessive amount of inflammation round the seat of the ulcer, considerable chronic inflammation takes place, which may produce symptoms and physical signs suggestive of a tumour. There is further a risk of this condition becoming malignant.

Treatment.

The leading indications are to heal the ulcer, relieve the symptoms associated with its presence, and treat the conditions consequent on it, such as constipation, anæmia, and hyperchlorhydria. Complete rest in bed for several weeks is usually essential, giving the stomach complete rest for a few days, the patient being fed by the rectum. The details of treatment may be considered from, (1), the immediate, and, (2), the later points of view.

The Immediate Treatment.

1. Absolute rest in bed for two or three weeks or more, in proportion to the severity of the hæmorrhage.

2. For two or three days or thereby the stomach should be given complete rest, nourishment being given by the bowel.

3. At the outset, sedatives are valuable for arresting the hæmorrhage and diminishing the restlessness and pain, and so ensuring complete rest to the patient,—*e.g.*, ½ gr. extract of opium, ¼ gr. of morphia, or ⅙ gr. of heroin. This may be repeated two or three times within the first twenty-four hours.

4. Diet.—For forty-eight hours or thereby the patient should be fed exclusively per rectum, the nourishment consisting in 10 ozs. of normal saline every four hours. If ordered, a little stimulant can be given with the saline. Subsequently nutrient

enemata may be given which may alternate with the saline ; glucose, white of egg, milk and brandy, are the most valuable ingredients.

Forty-eight hours after the bleeding has stopped there are two systems of feeding available, firstly, the system of beginning with extremely light feeding with teaspoonful doses of nourishment, *e.g.*, milk, increasing in amount daily, until at the end of the fourth or fifth week a full light diet might be in use. The second system is that of feeding more liberally from the outset, beginning on the third day with a little milk, white of egg, chicken tea, and increasing in amount and strength of nourishment rapidly, until at the end of ten or fourteen days the patient might be taking a diet including beef-tea, milk, chicken, fish, and bread, with light puddings. The latter method of feeding when practicable is advisable, as it keeps up the strength of the patient and shortens the period of convalescence. The test of the diet is the patient's toleration for it, and freedom from symptoms.

5. The bowels must be carefully regulated by suitable aperients.

6. Tonics are of value, more especially iron, arsenic, and occasionally strychnine.

The Later Treatment.

The important points in the later treatment are to regulate the patient's feeding, both as regards frequency of, and the nature of the meals—excessive tea drinking, too frequent meals, hurried eating, are common faults. Further steps must be taken to correct the constipation permanently. When practicable this can best be done by a course of massage and exercises of a curative kind carried out daily for four to six weeks. Keep in view the general correctness of the axiom that the most frequent site of gastric ulcer is in the appendix region; this axiom implies that stasis or stagnation in the ileum or colon, often combined with some old standing disease in the appendix region, is the original exciting cause of the gastric ulcer. The liability to recurrence of the ulcer is illustrated in one of the cases referred to, and is due to the fact that the primary disorder in the bowel lower down had not been effectively corrected.

DUODENAL ULCER.

In a previous lecture I described the clinical features and management of gastric ulcer, and to-day we are considering the closely allied subject of duodenal ulcer. There are certain points of contrast in these two conditions: gastric ulcer is essentially a disease of the female sex, and is most commonly met with in young women between the ages of eighteen and twenty-five; duodenal ulcer on the other hand is essentially a disease which affects men, and more especially between the ages of twenty-five and forty. To this general rule there are of course exceptions.

Symptomatology.

In a typical case of duodenal ulcer, the clinical features are characteristic. The patient complains of pain in the epigastric region, frequently severe, and coming on about two hours after food. This pain is relieved by the taking of food, hence the term "hunger pain" which has been applied to it. A further notable feature of the pain is its liability to occur during night, the patient being wakened in the early hours of the morning by a vague discomfort or severe pain. The attack of pain may last for a few minutes or half an hour, and may recur each night. More frequently there are long intervals of complete freedom from pain, the attacks lasting for a week or two and tending to recur every few months or at longer intervals. Other symptoms of gastro-intestinal derangement may be present. such as flatulence, irregular action of the bowels—which may be sometimes constipated and sometimes loose—with acid eructations, and not infrequently the passage of blood in the stools, known as melæna. This hæmorrhage from the bowel is a very characteristic physical sign. Many cases of duodenal ulcer, however, run their course without the occurrence of any hæmorrhage.

Symptoms.

There is a great variation in the symptoms of duodenal ulcer. On the one hand it is by no means very uncommon to find that the ulcer is first revealed by a perforation, there having been no previous symptoms of digestive disorder, or only symptoms of the most trivial kind. On the other hand, many cases are met with in which the symptoms above described are present in their classical form. In a proportion of cases the symptoms may be less clearly defined, and the patient is for months or years erroneously labelled and treated as a case of chronic "indigestion." It cannot be too strongly emphasised that the term indigestion is a symptom and not a disease, and the application of modern methods of examination can in nearly every instance lead to accurate diagnosis of the condition. The symptoms of the disease tend, as has been already indicated, to recur, and cases are known where the disease has existed for twenty years or more.

On physical examination the general appearance of the patient varies according to the stage of the disease. If the patient is seen during an attack, he looks ill, and the examination of the abdomen usually reveals pain on pressure, localised mainly to the epigastric region, but often associated with some pain on pressure in the iliac region. If the patient is seen during the interval, his general condition may appear quite satisfactory. This fact often leads to the medical man overlooking the true significance of the history. In cases of long-standing, the patient may show a moderate degree of emaciation and anæmia, and in some cases physical examination may reveal a small hard swelling in the region of the duodenum, the condition at this time closely simulating malignant disease. The presence of blood in the stools has been already referred to. Examination with the X-rays frequently gives information of the greatest value. Sometimes the nature of the disease can be determined with certainty by the presence of bismuth adhering to the base of the ulcer. More commonly the examination of the screen shows irregular action of the duodenum in the passage of the bismuth contents through it. In some cases the duodenum is shown to be dilated. A common accompaniment is marked stasis in the terminal part of the ileum.

According to many authorities, the great majority of cases of duodenal ulcer are secondary to the existence of disease involving the appendix or the terminal portion of the ileum. It is therefore essential that in all doubtful cases attention be specially directed to the investigation of this region.

Treatment.

The treatment of duodenal ulcer may be medical or surgical. In cases of long standing which have proved resistant to medical treatment, and in cases associated with recurring hæmorrhage, surgical treatment is indicated, the operation usually performed being gastro-enterostomy. In favourable cases the removal of the ulcer may be carried out, and in cases where there is evidence of disease of the appendix, that requires to be dealt with.

The principles of medical treatment can be shortly summarised. A period of complete rest in bed is essential to establish the most favourable conditions for the healing of the ulcer. The chief symptom—abdominal pain—is relieved by the administration of large doses of alkalies—carbonate of soda or carbonate of magnesia—which as a rule give immediate relief, probably by neutralising the excessive secretion of acid—hyperchlorhydria—which is frequently present in these cases. In exceptional cases a dose of morphia or heroin, preferably given hypodermically, may be necessary for the relief of the severe pain.

The diet should be largely protein in character, including a liberal supply of milk, fish, chicken, and white of egg. The albumin of these foods is of special value in neutralising the hyperacidity. The bowels must be carefully regulated by the judicious use of aperients—the prevention of ileal stasis and of colon stasis or constipation being one of the most important factors in the successful medical treatment of these cases.

After the acute symptoms have passed off, various tonic remedies, notably arsenic, iron, and strychnine, are indicated.

The success of medical treatment can not as a rule be determined from hospital observation. The test of the efficiency of the treatment lies in the patient's power to resume his ordinary work and to remain permanently free from symptoms, and if the patient cannot stand that test, there should be no delay in having recourse to operation.

CHRONIC APPENDICITIS.

A word of explanation is necessary as to the inclusion of a lecture on chronic appendicitis in a course of lectures on Medical Nursing.

Chronic disease of the appendix is essentially a surgical condition, and can only be adequately dealt with by removal of the appendix. The frequency, however, with which chronic appendicular mischief is overlooked in practice, the affected subject remaining in permanent poor health and treated as a case of indigestion, neurasthenia, chronic constipation, or as "neurotic," makes it desirable to draw special attention to the medical aspects of the condition. Errors in diagnosis arise from failure to recognise that chronic focal mischief in the appendix is a frequent cause of conditions such as indigestion, neurasthenia, rheumatism, and chronic constipation with colitis.

Any latent septic mischief in the appendix sooner or later involves in a more or less marked degree the large and small intestines and stomach. It is now recognised that a large proportion of cases of stomach derangement and of duodenal ulcer occur as secondary results of disease in the ileo-cæcal region. We also know that ileal stasis on the one hand, and general colon stasis on the other, with resulting dilatation and displacement of the bowel, are frequently present in association with disease in the appendix region. We have in the ward at present two typical cases of chronic appendicitis. In both instances the patients have been the victims of prolonged ill-health for many years, and had undergone different forms of medical treatment without benefit Their cases have been variously diagnosed as due to indigestion, neurasthenia, or of neurotic origin. The following are typical cases in which the symptoms are those of neurasthenia or indigestion. In other cases the symptoms may be referred to the joints or the muscles, the case clinically coming more under the category of rheumatism. I cannot do better than submit a full summary of the history of these two interesting cases prior to their discharge from the ward.

Neurasthenia and Indigestion due to Chronic Disease of the Appendix with Adhesions.

1. David S., aged forty-three years, a clerk, was admitted to my ward complaining of slight pain in the epigastric region, usually commencing in the evening, with increasing asthenia of about ten years' duration. His illness started acutely about ten years previously with severe abdominal pain and vomiting; he was in bed for two months at that time, and he had had recurring attacks of pain with obvious gastric disturbances since. The pain usually came on

about eight o'clock in the evening, shortly after supper, always localised to the epigastric region, and keeping him awake part of the night. It was relieved by hot applications. He used to vomit about twice a week, usually about 11.30 p.m., but the vomiting has been less frequent of late. His appetite has been fair, but he was much troubled with flatulence and water-brash. During the last few years he has frequently been in bed for a week or two at a time. His weight is about a stone below his normal. He has suffered from constipation since the onset of his illness ten years ago, and has been much troubled with headache. There is nothing to note with regard to previous illness, personal habits, or heredity.

The general condition of the patient is very unsatisfactory. His face is thin and drawn, his nutrition very poor, and his complexion pale and sallow. On objective examination his tongue is flabby and dirty, his breath is slightly offensive, and there is a considerable degree of pyorrhœa. On examination of the abdomen there is distinct pain on pressure in the right iliac region, also tenderness on pressure immediately to the left of the umbilicus and over the upper part of the right rectus muscle, which shows a distinct degree of rigidity. There is marked gurgling in the ileo-cæcal region. On examination by a test-meal the acidity of the gastric contents was found to be normal. On examination after a bismuth test-meal the stomach was found normal in position and action. After six hours there was an abnormal retention of the bismuth meal in the terminal coils of the ileum (ileal stasis), and after forty-eight hours a moderate degree of colon stasis, commencing at the hepatic flexure. The motions were constipated and offensive. The pulse was weak, and the heart-sounds feeble. This combination of symptoms and physical signs point clearly to a primary lesion in the ileo-cæcal region, interfering with the free passage of the ileal contents into the cæcum, probably due to adhesions, which may be secondary to old-standing appendix mischief. In view of the chronic history and the local condition it is inadvisable to waste time over a prolonged course of medical treatment, and it has been arranged, therefore, that an operation be performed.

At the operation the correctness of the diagnosis was established. The patient already feels and looks much better, and there is little doubt that a satisfactory return to permanent good health will be attained, and that this will be maintained, especially if steps are now taken, by suitable exercises and massage, to improve the weakened tone of the intestinal and abdominal musculature.

2. The second case is that of Mary R., aged twenty-eight, single. She was admitted complaining of pain in the stomach, vomiting, and general weakness of ten years' duration. The illness began with pain in the region of the stomach, this being at first of an intermittent kind ; it might last for a few hours or a whole day. At first there would be intervals of freedom for a month or two, but these intervals gradually diminished in length until in the last year there was seldom more than a day or two's freedom from pain. Her illness has been accompanied by increasing disability for house work. There was no history of hæmatemesis, or melæna, and she is not much troubled with wind or water-brash. The patient thought she was rather better on a full diet than on a restricted one. She had been in bed for weeks at a time on account of her stomach trouble. She has had no previous illnesses of any consequence, but has never been robust. Her personal habits have been satisfactory ; her mother was a martyr to indigestion.

The general condition of the patient is poor. She is anæmic, thin, with a soft and flabby muscular system. With regard to her digestive system, the patient complains of pain in the umbilical region, passing through to the back, and sometimes to the left side, usually fairly severe, and lasting many days, which is relieved by vomiting, the vomited matter being usually sour fluid, and occasionally bile. The pain is not notably influenced by the ingestion of food. The bowels are stated to be regular. Objectively, the tongue is flabby and furred, the teeth are all artificial, having been in an unsatisfactory state for a long time prior to their removal a few years ago. The abdomen is exceedingly soft and flabby, with marked splashing in the ileo-cæcal region, and also to a much less extent in the epigastric and left lumbar region. On X-ray examination very marked ileal stasis was present, with a nearly equally-pronounced general colon stasis, the whole colon containing bismuth after forty-eight hours. There is no evidence of disease of the gall-bladder. Other systems are apparently normal, with the exception of—(1) a weak condition of the circulation generally; (2) numerous catarrhal cells in the urine; and (3) slight excess of indican. The combination of the history with the clinical conditions described point clearly to the ileo-cæcal region being the primary source of the mischief, the ileal stasis being, in all probability, the primary factor associated with a septic focus in the appendix. At the operation the correctness of this opinion was confirmed. It is now a month since the operation, and appearances promise well for a completely successful result.

Diagnosis.

The diagnosis of these cases is easy if the frequency of disease of the appendix be kept in view and adequate investigation made to determine its presence. The application of X-rays after a bismuth meal is specially valuable. Special attention should be directed to the adequate study of the stools and urine in these cases. The stools are almost always profoundly deranged, being offensive, constipated, or sometimes unduly loose. The urine may be slightly turbid, due to the presence of catarrhal cells or bacteria.

The Treatment is in the first instance surgical, and consists in the removal of the appendix and relieving any adhesions which are present. In doubtful cases a thorough examination should be made, not only of the ileo-cæcal region, but of the duodenum and stomach. Special precautions are necessary at the operation to avoid sepsis even in its minor forms, as that predisposes is to the formation of new adhesions. Convalescence in many cases tardy on account of the long duration of the previous toxæmia. An important part of the after-treatment in many cases is the application of massage and remedial exercises to strengthen the muscles of the abdomen and bowel, in order to remove as far as possible the atony and displacement or prolapse of the bowel which are prominent features in cases of long standing.

COLITIS.

(*Syn.* MUCOUS COLITIS.)

Colitis is an inflammation or catarrh of the colon. It is a condition of great clinical importance on account of its frequency, the severity of the symptoms which may be present, and the fact that the symptoms are in many cases not directly related to the bowel, with the result that the true nature of the disease is often overlooked.

There are two main types of the disease: one the common variety, known as mucous colitis; the other rarer and more acute, and associated with hæmorrhage, known as ulcerative colitis. The two diseases are clinically distinct. We will now consider the symptoms and treatment of mucous colitis.

COLITIS. (*Syn.* MUCOUS COLITIS.)

The symptoms complained of by a patient suffering from mucous colitis are of the most varied nature. They may be those of simple indigestion, characterised by a varying degree of abdominal discomfort and sometimes pain, with a general want of vigour, associated with diarrhœa or constipation, or diarrhœa alternating with constipation; the stools being either loose or constipated, and containing a large amount of mucus. In other cases the symptoms may be mainly those of neurasthenia, characterised by great diminution of physical and mental vigour, irritability, or depression, and associated usually with constipation, want of appetite, flatulence and abdominal discomfort. In not a few cases of this group there may be no symptoms referred to disorder of the digestive tract, and the evidence of any local derangement in the bowel is only forthcoming if a very careful inquiry is made into the symptoms and a careful examination of the stools.

Diagnosis.

The diagnosis of a case of colitis can only be conclusively established by the careful examination of the stools; the essential feature being the passage of a large amount of mucus. This may take the form of numerous large shreds of mucus, often described by the patient as a jelly-like material, or it may form the coating of a mass of fæces. If the bowel be cleared out either by means of a suitable aperient or by an enema, and subsequently washed out by a couple of pints of plain water, the returned fluid will contain a large amount of mucus—this mucus being characteristic of the disease.

The disease is often complicated and aggravated by other disorders, notably severe constipation (colon stasis), stasis of the last part of the ileum (ileal stasis), and focal mischief in or around the appendix. In cases associated with abdominal discomfort and pain as a prominent feature, the pain is due to spasmodic contraction of one or other part of the colon. On examination of the digestive tract with the X-rays, it may be found that the contents pass through the colon with undue rapidity, there being frequently, however, some delay in the terminal part of the ileum. In other cases there is very marked colon stasis, the delay being pronounced in the cæcum, ascending colon, the transverse colon, or in the descending colon. As already mentioned, the distinctive feature of the disease is only determined by the careful examination of the stools.

In the differential diagnosis special attention has to be directed to excluding disease of the appendix, the early stages of malignant disease, and in some cases melancholia of primary origin. A septic condition of the teeth and gums (pyorrhœa) is frequently present, and is sometimes the starting point of the disease. There is one peculiarity about the disease which must always be kept in view, and that is the tendency for those affected with it to become unduly self-centred with regard to their health, and to greatly magnify the symptoms. It is of the utmost importance that this fact be sufficiently recognised by the doctor and by the nurse in charge.

Prognosis.

A guarded prognosis, more especially as to the duration of treatment, is essential. Cases of colitis are frequently tedious and often intractable, and care and treatment may be necessary for many weeks and even months. Success in treatment largely depends upon the accuracy in diagnosis as to the severity of the lesion, and on the skill of the doctor and nurse in handling the patient. If the catarrh of the colon is very advanced, and is shown by the X-rays to be associated with pronounced dilatation and stasis of the colon, and if medical treatment carried out for a short time fails to give the promise of a successful result, the question of skilled surgical treatment should be early considered.

Treatment.

Few conditions call for greater skill and tact in treatment. In no condition is it more essential to recognise the importance of treating the patient more than the disease. The first difficulty that presents itself is the question of the advisability of putting the patient to bed. In many cases this is essential, more especially in cases associated with marked neurasthenic symptoms with anæmia. In other cases where the symptoms are slight, it is disadvantageous to put the patient to bed, as the mental effect of enforced rest is frequently prejudicial and tends to his over-concentration on the symptoms. The first essential therefore is accurate diagnosis as to the degree of severity of the condition, and this diagnosis can only be made after a careful survey of the nature and duration of the symptoms, a study of the temperament of the patient, the general appearance of the subject, and the condition of the stools as determined by medical examination.

The principles of treatment are (1) to give the bowels as much rest as possible, by keeping the patient in bed and by making the diet light and nutritious; (2) to clear out the bowel thoroughly by means of lavage, care being taken not to overdo this treatment by carrying it out too long, and so further aggravating the atonic condition of the muscles of the colon ; (3) to tone up the muscle of the colon and the abdominal wall by means of skilled massage with exercises, and in some cases, judicious application of the faradic current ; (4) in cases which prove resistant to treatment, the use of an autogenous vaccine prepared from the bacteria in the stools is sometimes of great value ; (5) the administration of a mental tonic is of the utmost importance, encouraging the patient, and getting his mind directed away from his bowel and his symptoms generally ; (6) in aggravated cases of long standing which prove resistant to medical treatment, the question of operative treatment—appendicostomy followed by irrigation of the colon, or a partial or complete colectomy—has to be considered.

It will be convenient to describe the treatment of a case of average severity.

A.B., clerk, age thirty-five, admitted complaining of indigestion, abdominal discomfort, and constipation, alternating with diarrhœa, accompanied by slight loss of flesh, and great want of vigour : sleeplessness was a prominent symptom, this being often induced by an ache or pain in the back. Physical examination revealed a very flabby condition of the muscles of the abdominal wall, and also of the intestinal muscle, associated with some splashing over the cæcum and colon. Frequent examination of the stools revealed the presence of a large quantity of mucus, the stools being markedly offensive. After the bowel had been thoroughly cleared, examination by the X-rays showed distinct ileal stasis, a moderate degree of colon stasis, and a spasmodic condition of the descending colon.

The details of treatment as carried out in the above case were as follows :—

1. Complete rest in bed : this was maintained for a little over three weeks.

2. After a preliminary dose of calomel followed by a morning saline, the bowel was washed out each day by an enema consisting of two pints of water containing a very little soap, and fifteen minutes afterwards, when the enema returned, the bowel was irrigated by a couple of pints of plain water administered at blood-heat. This was continued daily for a fortnight, by which time the irrigating fluid was returned perfectly clear, the amount of mucus being now very considerably reduced.

3. The diet was restricted to milk foods, and fish or chicken ; no red meats being allowed. Little fluid was given with meals and no soups.

4. Ten oz. of hot water were given on an empty stomach three times a day

5. After a fortnight, massage was commenced —ten to twelve minutes' abdominal massage being given daily, accompanied by digital manipulation of the spine, some general massage, and a few trunk exercises, these being gradually increased.

6. A simple tonic was administered containing strychnine and arsenic ; the chief value of this being in all probability its mental effect.

7. The importance of the application of mental tonic treatment both on the part of the doctor and the nurse was kept in view.

ULCERATIVE COLITIS.

Ulcerative colitis is a rarer, more acute and more severe type of inflammation. It is most frequently seen in subjects who have previously suffered from catarrh of the colon and more especially dysentery. It is not infrequently fatal. It is characterised by severe diarrhœa and the frequent passage of stools containing a mixture of blood and mucus often in large amount. It is usually associated with abdominal discomfort or pain, great physical weakness, anæmia, deranged digestion, and irregular temperature.

Diagnosis.

The diagnosis is usually easy, the distinctive feature of the disease being diarrhœa associated with stools containing mucus and blood. Tuberculous disease of the bowel and early malignant disease may closely simulate this disease.

Treatment.

Treatment has to be conducted on the same general lines as those laid down for simple or chronic colitis. The internal administration of quinine is often beneficial. The external application of heat to the abdomen, and an occasional dose of a sedative, *e.g.*, Dover's powder, are sometimes useful in relieving this diarrhœa without in any way aggravating the inflammation. Washing out the bowel from below is sometimes useful, but is often impracticable on account of the pain. The results of bacteriological examination of the stools may suggest the advisability of the use of an autogenous vaccine. In severe cases the question of performing an appendicostomy, and washing out the bowel from above with a weak solution of eusol or other antiseptic, has to be considered.

JAUNDICE.

Jaundice is a symptom, not a disease. It varies in severity from a slight yellowish tinge of the conjunctivæ, with lack of clearness of the skin, to a condition in which the whole skin is of a dark yellow or saffron colour, and the conjunctivæ a deep yellow tint. It is due to the presence of bile in the blood. Its presence is always an indication that there is some obstruction to the free passage of the bile between its site of production in the liver and the opening of the common bile duct in the duodenum.

The following three cases may be given here which illustrate very well the three most common clinical conditions associated with jaundice. These are—

1. Simple Catarrhal Jaundice.
2. Gall-Stones.
3. Malignant Disease.

We shall discuss these *seriatim.*

1. SIMPLE CATARRHAL JAUNDICE.

This is a disease most commonly seen in young adult subjects ; it may arise after a chill, or more often without apparent cause. The clinical features are well brought out in a typical case.

History.—Man, aged twenty-two, was admitted to the wards three weeks ago, complaining of jaundice, which had developed three days before admission. With the exception that he felt out of sorts, and disinclined for food on the first day, he complained of no symptoms except discoloration of his skin and eyes. He had also observed that his stools were pale in colour and the urine unusually dark.

On examination, the patient was found to be a well-nourished man; skin markedly jaundiced; conjunctivæ very yellow; tongue dry and coated with a yellowish-grey fur; abdomen was slightly full; the liver was a little enlarged, some tenderness being complained of on pressure over it; the motions were quite white, due to the absence of bile and to the presence of undigested fat; the urine was dark-green in colour, with characteristic froth on the surface, due to the presence of bile pigment in large amount; the temperature was subnormal, the pulse rather reduced in rate, 70 per minute.

These, then, are the typical features of a case of simple catarrhal jaundice. The condition is the result of a catarrhal or infective process, originating as a rule in the duodenum, spreading up into the bile duct, obstructing the passages, and thus leading to the absorption of the bile into the system. In some cases there may be a slight rise of temperature at the outset, with increased pulse rate; more commonly the pulse is rather diminished in rate, due to the effect of the bile on the circulation.

In most cases, the pathogenic organism is the bacillus coli communis. The disease occurs most commonly in subjects who suffer from constipation, or otherwise have weak digestion.

Prognosis.

Is invariably good—complete recovery being the rule in from four to six weeks or thereby.

Treatment.

Keeping in view the cause of the condition, the principles of treatment can be readily understood. Complete rest in bed is advisable; judicious clearing out of the bowel by suitable aperients, the administration of a simple light diet and appropriate liver stimulants, form the chief points in treatment. You can judge of the rate of recovery in an average case from the condition of the case above cited. He is now, three weeks after admission, nearly recovered. His skin and conjunctivæ are nearly normal in colour. The patient feels well, but is slightly pale and still somewhat sallow in colour. The urine is clear; the stools are normal in colour. His pulse, temperature, and respirations are normal.

The details of the treatment applied in the above case were as follows :—

(*a*) Complete rest in bed for fully a fortnight.

(*b*) The administration of 1 grain of calomel each night for three nights, followed by 1 oz. of Henry's solution in the morning.

(*c*) Diet restricted during the first four days to milk, water, and chicken tea—3 pints of milk in twenty-four hours being given; later, bread, toast, and milk puddings were added. The patient is now on the light diet of the hospital.

(*d*) The local application of liver packs each day, the pack being renewed every half-hour for two hours.

(*e*) The administration of a general tonic containing strychnine and nitro-hydrochloric acid as a liver stimulant.

(*f*) We prescribed some physical exercises for him afterwards, adapted to increase the action of his diaphragm, and strengthen the action of the abdominal and intestinal muscles generally: these exercises are a most useful part of the treatment.

The most important essentials in the after treatment are, the correction of constipation, careful feeding, and attentions to the functions of the kidneys and skin.

2. JAUNDICE DUE TO GALL-STONES

(CHOLELITHIASIS).

The presence of gall-stones in the gall-bladder is a very common occurrence, although it is only in the minority of cases that they give rise to any definite symptoms. In number and size the gall-stones vary very greatly: there may be a single stone of large size, or many hundreds of small calculi. In some cases there may be no actual calculi, but merely a deposit of a very fine nature, spoken of as "gravel." They are mainly composed of cholesterin, derived from the bile, and arise from a bacterial infection of the bile ducts, the infection spreading upwards from the intestine. Normally, bile is sterile, but in practically all cases of cholelithiasis micro-organisms are obtained if carefully searched for. As a rule, the bacillus coli communis is the microbe found, but the typhoid bacillus, staphylococci, and streptococci have also been found, and it is probable that other bacteria may be responsible for the catarrh of the main duct and of the gall-bladder (cholangitis) which induces the condition.

As already indicated, gall-stones are frequently present and produce no distinct clinical evidence of their presence, and when definite symptoms are produced by gall-stones, jaundice is by no means invariably present. Jaundice is only present when the gall-stone in its passage obstructs the common bile duct, thus allowing the absorption of the obstructed bile into the system.

There are several conditions which predispose to gall-stone formation. Gall-stones occur much more frequently in women than in men; this is possibly associated with their taking less exercise and with the wearing of corsets, which may tend to impede the flow of bile through the liver and from the gall-bladder into the cystic duct and common bile ducts. Sedentary habits, from whatever cause arising, undoubtedly predispose to cholelithiasis. Injudicious eating and drinking is a very important factor; long-continued ingestion of excess of starchy foods is a common precursor of the development of gall-stones. This faulty feeding induces a tendency to catarrh of the stomach and duodenum, with abnormal fermentation brought about by bacterial action. If the faulty feeding is associated with the immoderate use of spirits, wine, or beer, the tendency to gall-stone formation is much increased.

Symptoms.

The symptoms induced by gall-stones vary greatly in different cases. The stones may be in the gall-bladder, cystic duct, or common bile duct. So long as they remain in the gall-bladder, there may be no symptoms of any kind, unless possibly some slight uneasiness and discomfort in the epigastric region with tenderness below the right costal margin. When a stone is dislodged and the calculus reaches the cystic duct, a typical attack of gall-stone colic is induced : this takes the form of very severe pain, beginning under the right costal margin and radiating thence towards the pit of the stomach and round the right side in the direction of the right shoulder. Not infrequently the pain ends with the onset of vomiting. In a severe seizure there may be great collapse, so that the condition may simulate angina pectoris, perforation of a gastric ulcer, or other grave abdominal disorder. Jaundice is not usually an accompaniment of gall-stone colic, when the colic is due to the presence of a stone in the cystic duct, but in some cases it may appear at the end of twenty-four hours and persist in a slight degree for a few days. In such cases it is due to catarrh spreading to the common bile duct and interfering with the flow of bile. These attacks may be repeated at intervals of a few days, weeks, or months, the patient being quite comfortable in the intervals between the attacks.

Gall-stone in the Common Duct.

The symptoms of gall-stone colic, when the stone is in the common duct, resemble closely those already described for a stone in the cystic duct, but differ in regard to the seat and distribution of the pain and in the occurrence of jaundice. The pain in such a case begins in the epigastrium and may radiate to the left side of the abdomen. The tenderness is usually most marked in the middle line about midway between the umbilicus and the ensiform cartilage. Should the stone quite fill the duct, or should it become impacted at the entrance of the bowel, the jaundice will be persistent, and may become extreme. In many cases there is an associated catarrh of the gall-bladder, an infective cholangitis, which may be a serious complication.

Diagnosis.

In uncomplicated cases of gall-stones, the diagnosis does not, as a rule, present much difficulty. The situation, character, and distribution of the pain and tenderness, along with the accompanying symptoms, will usually suffice to render the case clear. The locality in which the stone is situated can frequently be determined by noting the point of greatest tenderness. If the common duct is blocked, and more especially if the obstruction is complete, the jaundice will become intense, and there may be great difficulty in eliminating malignant disease as a probable cause. A previous history of attacks or spasms, and particularly on account of severe pain at the onset of the illness, with local tenderness, point to gall-stones. In doubtful cases, an exploratory incision may be required to clear up the diagnosis.

The history of the following case is very typical of jaundice due to obstruction in the common bile duct :—

Woman, aged forty-five, was suddenly seized with severe pain in the pit of the stomach, which doubled her up, the pain radiating towards the left shoulder ; it was followed by vomiting. The pain was very severe, associated with some collapse, and was only relieved by hypodermic injection of morphia. It was followed in a few hours by development of marked jaundice, the stools becoming clay-coloured and the urine dark green from the presence of bile pigment. For many years previously she had suffered from indigestion, with occasional attacks of abdominal pain, not of a severe character. The patient fed well, took little exercise, and was fond of an occasional glass of beer. On admission she was markedly jaundiced. She was a rather fat and flabby subject; the abdomen was rigid, and marked pain was complained of on the slightest pressure in the epigastric region. The temperature was slightly increased, 100.2 F.; the pulse rate 90; the tongue dry and coated with a yellowish-white fur. There was some tenderness over the gall-bladder, due to an associated infective cholangitis.

These are the typical clinical features of a case of jaundice due to obstruction of the common bile duct, presumably by calculus, with an associated catarrh of the gall-bladder—the correctness of the diagnosis being established at the operation.

Treatment.

This may be conveniently considered under the following heads:—

(*a*) The treatment of biliary colic, associated with jaundice.

(*b*) Later treatment.

(*c*) Prophylactic treatment.

(*a*) *Treatment of biliary colic.*

The main indication is to relieve the pain which is induced by the spasm. This is effected by the administration of morphia, usually subcutaneously, aided by external applications of warmth (hot bottle, or hot fomentations). The stools should be carefully examined for the presence of the calculus, which in favourable cases is passed by the bowel. Where the stone is impacted and the obstruction is complete, operation is necessary.

(*b*) *Operative treatment.*

An operation is frequently necessary for the removal of the stone. The stone may be impacted at the termination of the common bile duct in the duodenum, in the common bile duct, or in the cystic duct. If impacted in the cystic duct, jaundice is absent, or is only present in a slight degree due to an associated catarrh of the common bile duct. In addition to removing the calculus from the biliary channel, drainage of the gall-bladder is usually necessary.

(*c*) *Prophylactic treatment.*

As gall-stones are chiefly met with in subjects who lead a sedentary life, feed injudiciously, and are specially liable to suffer from constipation, prophylactic measures must be directed in these directions. Exercises in the open air should be cultivated, and physical exercises, often combined with massage, adapted to strengthen the diaphragm and the abdominal muscles and quicken the abdominal circulation generally, are of great value.

With regard to diet, the main essentials are to avoid over-eating ; to restrict rich feeding of all kinds and condiments, taking special care to restrict the starches and sugars ; to masticate the food thoroughly, and to drink two or three tumblerfuls of water, or alkaline water, three times a day on an empty stomach ; spirits, wine, and beer are better withheld. The bowels should be regulated by an occasional mercurial, followed by a morning saline: a teaspoonful of phosphate of soda, or sulphate of soda, taken in a tumblerful of hot water the first thing in the morning, is a useful measure. A properly defined course of massage and exercises for the permanent correction of the constipation, for promoting a more free action of the diaphragm, and for correcting the stagnation of the whole venous system of the abdomen present in these cases, is a most valuable measure.

3. JAUNDICE DUE TO MALIGNANT DISEASE.

Not infrequently jaundice is one of the leading symtoms present in malignant disease. It is due to the presence of a tumour, which may be small or large, situated in such a position as to obstruct the free flow of bile through its normal channel. The tumour may be in the head of the pancreas, or in the duodenum, its presence in either of these situations obstructing the termination of the common bile duct. In other instances the tumour involves the common bile duct in its course. A feature of these cases is not infrequently the comparative absence of symptoms; pain is frequently absent in the early stages of the disorder.

The following case is fairly typical:—

A man of forty-two was admitted to the hospital, complaining of jaundice of six weeks' duration. Ten years ago a tumour of a malignant nature was removed from the bowel, but since that time he had enjoyed good health till six months ago, when he began to lose weight and also appetite. Jaundice supervened six weeks before admission, and speedily became intense, and in the last few weeks has been associated with marked itchiness of the skin. On objective examination, the patient was deeply jaundiced; he showed a moderate degree of cachexia; the stools were clay-coloured; the urine contained much bile pigment; the liver was slightly enlarged; but there was no other marked physical sign—no pain was complained of, nor was pain elicited on palpating the abdomen. This condition was clearly due to a deep-seated growth of a malignant nature, originating either in the head of the pancreas, or in the region of the duodenum: the jaundice being due to the obstruction at the termination of the common bile duct.

Prognosis.

In such cases is very bad, patients usually dying in a few weeks or months.

Treatment.

Is mainly symptomatic: keeping the patient as comfortable as possible; feeding very carefully so as to stave off as long as possible the advent of gastric catarrh with vomiting, and the administration of sedatives if required. These cases are very seldom amenable to operative treatment.

CIRRHOSIS OF THE LIVER.

There are two main types of cirrhosis of the liver: (1) associated with a liver which is reduced in size, so-called atrophic cirrhosis, or alcoholic cirrhosis; and (2) associated with enlargement of the liver, so-called hypertrophic cirrhosis of the liver. The following case illustrates very well the history and clinical features of cirrhosis of the liver of the common type. The history of the patient is as follows :—

A.B., cab-driver, has long been in the habit of taking alcohol to excess. A few months before admission he began to complain of symptoms of indigestion and constipation, with occasional attacks of looseness of the bowel. Some œdema of the feet developed later, with marked swelling of the abdomen and breathlessness on exertion, which led him to seek advice at the hospital.

On physical examination the patient presents the general appearance of a man who has indulged too freely in alcohol; his complexion is dirty; there is no distinct jaundice. His general nutrition is impaired; there is slight œdema of the feet and very marked swelling of the abdomen. The abdomen presents a characteristic rounded appearance, due to the presence of fluid. The umbilicus is flush with the surface of the skin; the tongue is furred; the stools are very offensive; the pulse rate is markedly increased, and the heart sounds are weak. The increase in the pulse rate and weakening of the heart sounds being the result of the toxic effects of the alcohol on the heart muscle.

The most characteristic symptom of cirrhosis of the liver is ascites or dropsy of the abdominal cavity. The presence of ascites can usually be determined by simple inspection combined with percussion, which reveals the presence of dulness in the flanks. In doubtful cases the diagnosis is verified by the use of the exploring needle. Occasionally the earliest symptom of the disease is hæmorrhage from the stomach, this being due to pronounced venous congestion of the blood-vessels of the stomach and the lower part of the œsophagus. The history of alcohol and the general features usually make the diagnosis quite clear. In exceptional cases a differential diagnosis has to be made from other conditions associated with ascites, such as pressure on the portal system by enlarged glands of tuberculous or other nature, or by neoplasm, or the result of chronic peritonitis. In cases associated with hæmorrhage, a differential diagnosis has to be made from cases of gastric or duodenal ulcer, and the early stages of malignant disease. Ascites associated with heart disease is readily determined from the co-existence of general dropsy, and from the condition of the heart and circulation generally.

Prognosis.

The prognosis in cases of alcoholic cirrhosis of the liver is a guarded one. By the time that symptoms of this severe condition are established, the disease of the liver is fairly advanced, and such cases as a rule do not live more than a few years. In favourable cases, however, a satisfactory recovery is established, and provided the patient regains good habits, a fair standard of health may be maintained for many years.

Treatment.

1. Prolonged rest in bed is essential, usually from six to eight weeks.

2. The removal of fluid from the abdomen has to be effected either by the judicious use of purgatives and diuretics, or by withdrawing the fluid from the abdominal cavity by means of Southey's tubes, the fluid being withdrawn very slowly. The repeated use of small doses of calomel followed by a morning saline of judicious strength; the administration of a diuretic,—*e.g.*, sodium theo-acetate, is valuable in removing the fluid.

3. The diet should be light and dry, little fluid being taken with meals. All forms of alcoholic liquor should be withheld.

4. At the outset, the administration of a bismuth, rhubarb, and soda powder may be useful for clearing the tongue.

5. Of tonic measures, potassium iodide and arsenic are the most generally useful.

HYPERTROPHIC CIRRHOSIS.

Short reference only need be made to the rarer form of cirrhosis known as hypertrophic cirrhosis associated with enlargement of the liver.

The most prominent symptom here is jaundice, which may be associated with digestive disturbance, the passage of pale stools, and a highly coloured urine containing bile. The liver is enlarged and may be tender. There is no ascites.

The causes of this condition are obscure. Alcohol in various forms is one of the determining causes.

Treatment is carried out on the same lines as those mentioned above.

CHAPTER II.

DISORDERS OF THE BLOOD AND DUCTLESS GLANDS.

ANÆMIA,

INCLUDING

SIMPLE ANÆMIA (CHLOROSIS) AND PERNICIOUS ANÆMIA.

THERE are three main clinical types of anæmia, cases of which are to be seen in every hospital. These are, simple anæmia or chlorosis, primary anæmia—so-called pernicious anæmia, and secondary anæmia. The last-named is, as its name indicates, a sequel to some obvious physical disorder, such as loss of blood from hæmorrhage, or the cachexia of malignant disease. We are not further concerned with this variety, and the two conditions whose management we have to consider to-day are those of simple anæmia (chlorosis) and primary or pernicious anæmia.

The Etiology of these Disorders.

The exact causation of these diseases is unknown. There are several theories, but the final cause of either is not determined. With regard to simple anæmia or chlorosis, a condition most typically seen in young women, the view is generally held that the condition is the direct result of constipation, some poison being absorbed from the bowel, which interferes with the proper formation of the blood elements in the bone marrow and the system generally. Pernicious anæmia, on the other hand, is essentially a disease of adult life, most commonly seen between the ages of thirty and forty-five, and is more common in men than in women. With regard to the cause of the disease, the toxæmic or infective theory is the view which is now most widely held. According to this view the disease is due to the toxins produced at a latent focus of sepsis in the system, this septic focus being most commonly seen in connection with the teeth, gums, digestive or utero-genital tract. Some physicians consider that these are the result of the anæmic condition rather than the cause. A careful examination into the history of these cases, however, lends ample support to the view, now held by practically all the authorities on the subject, that the condition is due definitely to a toxin or toxins produced at some septic focus, which disturbs the function of the bone marrow, and leads to the particular blood condition present in this disease. It will be convenient to discuss separately the two types of anæmia.

SIMPLE ANÆMIA OR CHLOROSIS.

This is essentially a disease of young women between the ages of fifteen to twenty-five. It is characterised by general anæmia or bloodlessness, with lack of vigour, breathlessness on exertion, and in some cases slight œdema of the feet; varying symptoms of indigestion are present, and constipation is usually a most pronounced symptom. In many cases, however, the existence of constipation is denied, this being so even in cases where a soap-and-water enema may be required for many days after admission to hospital to effect a preliminary clearing out of the bowel. (It cannot be too clearly emphasised that great caution is required in accepting the statement of any patient with regard to the presence or absence of constipation.) The pulse is increased in rate and weak in character, and the heart is dilated in proportion to the severity of the anæmia. The blood is found to be watery, the blood-cells containing too little hæmoglobin. The red cells may be reduced from 5,000,000 per cubic millimetre, to 3,750,000, and the hæmoglobin from 100 per cent down to 30 per cent. This relatively greater reduction in the amount of hæmoglobin present is one of the special features of the blood in simple anæmia. Amenorrhœa is a common symptom, and is probably protective in nature. In many cases the teeth are defective, both in number and in quality, and the gums are frequently in an unhealthy septic condition. The possibility that the anæmia is secondary to a latent focus of tuberculous mischief should always be kept in view.

The General Treatment.

The condition is readily amenable to treatment if the necessity for rest is recognised, and the treatment persevered with until the condition of the blood is restored and the constipation corrected. The treatment may be shortly summarised as follows :—rest, aperients, and iron.

The details of treatment required for the average case are as follows :—

1. Complete rest in bed for three weeks, and subsequently a graduated amount of liberty and movement being allowed.

2. The bowel cleared by the administration of a soap-and-water enema, which requires to be repeated for four days if necessary until all scybalous masses are removed. Thereafter one grain of calomel may be given, followed by 2 ozs. of Henry's solution, and the bowels kept judiciously active by half a teaspoonful of cascara, and half a teaspoonful of glycerine given twice daily.

3. Diet.—If there is no stomach disorder, the feeding presents no difficulty. If the patient had previously fed too exclusively on bread and tea, from the first the light diet of the hospital should be given, tea being provided once daily; eggs, meat juice, and oatmeal in the form of porridge, may shortly be added, as these are relatively rich in iron.

4. The Teeth.—In many cases a pronounced degree of pyorrhœa exists and forms a septic focus; this must be attended to, extraction being often desirable. Steps should be later taken to supply a plate.

5. Administration of Iron.—The patient may be given a pill containing 2 grs. protochloride of iron, and $\frac{1}{60}$ grain arsenious acid. Many other preparations of iron can be used. It is advisable not to use a liquid preparation of iron which discolours the teeth.

6. Treatment of Constipation.—Measures should now, if possible, be taken to promote a complete cure of the constipation. This can be done by a course of special massage, and remedial exercises carried out under supervision for six weeks

or thereby. This would render the patient independent of the use of drugs, and permanently improve her general health. As these patients usually take too little fluid, the drinking of water on an empty stomach should be encouraged.

PRIMARY OR PERNICIOUS ANÆMIA.

We now pass to the consideration of primary or pernicious anæmia. As already indicated, this is a disease of adult life, seen generally between the ages of thirty and forty-five, men being more frequently affected. If a sufficiently thorough investigation is made, it will be invariably found that there is some latent focus of septic mischief, which is, in all probability, the primary cause of the disease. In its typical form the disease is characterised by general weakness and breathlessness, accompanied by marked pallor, the skin often having a faintly yellowish tint, an evidence of general anæmia; the blood is thin and watery, the red cells being enormously reduced in number, while the proportion of hæmoglobin is relatively or actually high. In a typical case

R.B.C. 1,120,000 in place of 5,000,000.
Hæmoglobin, 1.2 per cent.

The proportion of hæmoglobin is actually higher than usual, this being a distinctive feature of the blood in this disease. The teeth and gums often reveal a pronounced condition of sepsis, and the stools are exceedingly offensive. The temperature may be slightly irregular.

The general principles of treatment are similar to those laid down for simple anæmia—

1. Rest is the first essential, and may require to be carried out for one to three months.

2. The second essential is to direct attention to the removal of any sepsis in the mouth, the correction of any abnormal putrefaction in the large bowel, and the removal of any catarrhal condition in the uterus or bladder. Among measures which are useful in this direction are the internal administration of intestinal antiseptics, such as salol, creosote, calomel, kerol; these are useful though of limited value. Intestinal lavage, carried out daily for some weeks, is often a valuable measure, and the use of a vaccine prepared from the stools is a useful measure in selected cases.

3. The third point is the administration of a diet adapted to diminish the abnormal fermentation. (See lecture on Auto-Intoxication.)

4. The administration of tonics, and very specially arsenic, which is most valuable in this disease.

5. In very severe cases, transfusion, using salines, or in some cases blood, saves the patient's life, at any rate for a time.

A special feature of this disease is the liability to recurrence; this liability, however, diminishes in proportion to the extent to which all foci of septic mischief have been removed.

ADDISON'S DISEASE.

Addison's disease is a disorder of the suprarenal glands usually of tuberculous origin. It is a disease of adult life. The most distinctive feature of the disorder is pigmentation of the skin, induced by the diseased condition of the suprarenal gland.

Clinical Features.

The two most important clinical features are the pigmentation of the skin and general asthenia. The skin acquires a faintly yellow tint, and with this there is associated numerous more or less pronounced scattered areas of pigmentation, the size ranging from that of a pea to two or three inches in diameter or more. In pronounced cases these areas may present a deep brown appearance. In many cases there is an associated pigmentation in the buccal mucous membrane, most frequently observed on the roof of the mouth.

The general muscular weakness or asthenia is the next most distinctive feature. The capacity of the patient for physical exertion is greatly restricted, this being due to weakness of the heart muscle and of the voluntary muscles. It is usually associated with weak circulation and a low blood pressure. Symptoms of gastro-intestinal derangement are not infrequently present, and keeping in view the tuberculous origin of the disease it is not surprising to find that many of the cases show evidence of an old lung lesion of a tuberculous nature. The outlook for the patient affected with this disease is a very guarded one, the ailment tending to be progressive, and death frequently occurring from the severity of the asthenia or from complications. The following case is a very typical example of the disease :—

Mrs A. B., aged forty-five, has complained of increasing weakness for the last nine months. This has been accompanied by a change of colour of the skin, and the presence of numerous small and large areas of deep pigmentation over the surface of the skin, most pronounced over the anterior aspects of the chest and abdomen, and also the back. She has lost about a stone in weight during this period. On examination the patient is a small, spare, rather emaciated subject, with a very sallow skin, which shows numerous areas of deep brown pigmentation on the front of the chest, over the abdomen, and on the back. These vary in size from that of a small bean to irregular areas considerably larger than a five-shilling piece. The abdomen is extremely flaccid ; the bowels are constipated, and the X-ray examination shows a marked degree of stasis in the terminal portion of the ileum and also of the colon. The temperature is normal ; the pulse rate is round 90, the pulse being weak in character.

Treatment of the Disease.

The treatment of the disease is largely the treatment of symptoms. There is no known method of successful treatment. It has to be conducted on general lines as follows :—

1. Complete rest for many weeks.

2. Careful attention to the state of the gastro-intestinal tract by the administration of light diet, the judicious use of aperients, and by the careful application of abdominal massage.

3. The use of various tonic remedies, more especially arsenic, strychnine, cod-liver oil and malt, and the hypophosphites.

4. In a few cases benefit may be obtained by the internal administration of suprarenal gland. The results of this internal secretion therapy have not proved, however, very satisfactory.

EXOPHTHALMIC GOITRE.

(*Syn.* GRAVES' DISEASE.)

In the group of diseases of the ductless glands one of the most common is exophthalmic goitre or Graves' disease. The disease affects specially the female sex, and is most common between the ages of twenty and thirty-five. The exact causation of the disease is unknown. There are two main theories of causation: the one the toxic theory, the disease being regarded as the result of a general toxæmia of undetermined origin; the other the nervous theory, the disturbance of the gland being regarded as secondary to some derangement of the nerves controlling the gland. The fact that the disease sometimes develops after a fright or nervous shock lends some support to the nervous theory, but the balance of evidence is strongly in favour of the toxic theory.

Symptomatology.

The four most distinctive features of the disease are:—

1. The enlargement of the thyroid gland.

2. Eye symptoms, and more especially prominent staring eyeballs.

3. Tachycardia or rapid action of the heart, usually associated with palpitations.

4. The existence of fine tremors associated with general nervousness.

There are in addition many lesser symptoms and physical signs to be found affecting the other systems. Of these the more important are a moist warm skin; constipation, which may alternate with diarrhœa, often associated with symptoms of indigestion; frequency of micturition, and some disturbance of the menstrual function, either leucorrhœa, or menorrhagia.

The following case is a very typical example of the disease, the history being as follows:—

Mrs S., age thirty-two, enjoyed fair health until five months ago, her only previous weakness being that her digestion was not very strong. About five months ago, without apparent cause, she noticed herself becoming nervous, this being accompanied with tremulousness of the hands, and being more easily upset than usual. Shortly afterwards her eyes became a little more prominent and staring, the whites of the eyes becoming unduly prominent. Her digestive weakness was still more in evidence in this period, flatulence being troublesome, and constipation rather more pronounced than usual. She suffered from leucorrhœa, and recently from palpitations. She had been treated at home for three months without material benefit.

Diagnosis.

The diagnosis of the disease is easy, the symptoms and physical signs being quite characteristic. In the very early stages of the disease, however, the diagnosis may present some points of difficulty. Cases are commonly met with of young women presenting some symptoms of neurasthenia, with rapid action of the heart, a slight fulness of the thyroid gland, and with doubtful eye symptoms, where there is good reason to believe that the condition is one of exophthalmic goitre in its early form. This is the stage at which it is very important to recognise the disease, as it can invariably be cured if diagnosed early. Keeping in view the fact that the disease is probably of toxic origin, it is very important to look into every possible source of toxic infection, a thorough investigation being made in every direction. This investigation may involve a careful study of the digestive tract by means of the X-rays, so as to determine more especially the existence of ileal or colon stasis; the examination of the stools; the bacteriological examination of the urine; and the determination and correction of any pyorrhœa which may be present. Attention must also be directed to the uterine condition. Treatment must be specially directed towards the correction of one or more physical disorders which may be present, and may be the cause of the toxæmia.

Treatment.

The first essential in treatment is a thorough investigation along the lines laid down under diagnosis. Prolonged treatment is essential. The outlook for the patient is as a rule favourable provided adequate treatment be carried out, this being, however, necessary for a period of many months. The treatment may be considered under two headings—the immediate and the remote.

The IMMEDIATE TREATMENT consists in giving the patient complete rest under as favourable fresh air conditions as possible, and keeping her removed from all worrying influences. The more completely she can, for a time, lead, so to speak, the life of a vegetable, the more rapid will the progress be. A wise restriction should be laid on the writing of letters and on handiwork of any kind, these restrictions, however, being removed as quickly as the general conditions of the patient and the condition of tremors will allow. The diet should be light, nutritious, and yet ample in amount. It should be framed along the lines laid down in the lecture on Auto-Intoxication. The state of the bowel frequently makes it advisable for treatment to be directed in that direction by means of the judicious use of aperients and occasionally by lavage, which should be continued until a satisfactorily clean condition of the bowel is established.

Appropriate attention must be directed to the correction of any defect in the teeth or gums, and to the correction of any pelvic disorder. General tonics are of value, more especially arsenic, the hypophosphites, and cod liver oil and malt.

If the bacteriological examination has furnished evidence suggestive of definite bacteriological infection, the use of a vaccine may be indicated, as undoubted benefit results in some cases from its use.

Some authorities attach value to the application of X-rays or radium in treatment.

The REMOTE TREATMENT.—For a year or two after recovery, special care is necessary. Care has to be exercised in all the directions already specified : the avoidance of unduly hard work and of domestic and other worries is specially important.

Throughout the course of the disease it is important for the physician and for the nurse to encourage the patient in every way possible, mental tonic treatment being of value in this disease as in many others.

CHAPTER III.

DISORDERS OF THE HEART AND CIRCULATION.

THE PULSE.

According to an old-established custom in certain parts of China it is imperative for the Chinese doctor to be able to diagnose and to treat his patients without seeing them, the only part of their person which he is allowed to see or handle being the pulse. There is no question that a very great deal can be learned by the careful examination of the pulse both in regard to acute and chronic disease, but it is very desirable that the information to be learned from it should be supplemented by a knowledge of the history of the case, and by the results obtained from the general examination of the patient. We will shortly consider the method of examination of the pulse. It is studied in the following order :—we observe *seriatim* the rate, whether it is regular in time and in character, whether the pulse wave is small, moderate, or large in amount, whether it is sustained or falls quickly, whether the pulse wave is readily obliterated or obliterated with difficulty, and, lastly, we direct our attention to the condition of the vessel wall. Let us consider these briefly in order.

1. The Pulse Rate.

The pulse rate for a healthy adult ranges from 70 to 75 per minute. Exceptionally it is markedly slower: in some perfectly healthy subjects the pulse rate seldom exceeds 60 or less. The condition in which the pulse rate is permanently low, round 50 or thereby, is termed bradycardia. The pulse rate is readily increased by nervous excitement. It is also increased, though to a much less degree, by exertion. If a healthy man walks up and down a ward sharply once or twice, the pulse rate is not increased, or if so, only by two or three beats per minute. Where there is any cardiac weakness on the other hand, the same amount of exercise will induce an increase in pulse rate of 10 or 15 or more beats a minute, and may be accompanied by a slight degree of breathlessness. Tests of this kind are of the utmost value in determining the extent to which the reserve of the heart has been used up, and the result of such tests form a useful guide both for prognosis and for treatment.

The pulse should be counted for at least half a minute: it is inadvisable to count it for fifteen seconds and multiply the results by four; and in all cases in which obvious defects are revealed in the condition of the pulse, the rate for the full minute should be determined.

2. Regularity in Time and Character.

The second point to be determined is as to whether the pulse is regular in time and in character. The pulse may be regular in time and irregular in character: it may be irregular in time but fairly regular in character; it is very frequently irregular both in time and in character—that is to say the time interval between each pulse wave varies markedly and the magnitude of the pulse wave similarly varies.* A good deal of training is required to appreciate fully the variations in the pulse commonly met with. In an aggravated case of mitral disease, with failure of compensation, the pulse is frequently very irregular both in time and character ; there may be very long intervals between some of the beats, this being frequently due to the fact that many of the beats are missed, the heart muscle being so weak that it cannot convey the impulse right along the vessel ; similarly some of the pulse beats are much weaker and smaller than the others. In such a case there is no difficulty in detecting the great irregularity both in time and character of the pulse, but it is essential for the nurse to train her finger and mind in such a way as to be able to detect irregularities in the pulse of a much less pronounced character.

3. The Pulse Wave.

The third point to which attention should be directed is the force of the pulse beat. In health the pulse wave is moderate in degree; it comes up against the examining finger neither very quickly nor very slowly, and fades away in the same way, neither very quickly nor very slowly. In diseased conditions there are great variations in (*a*) amplitude of the pulse wave, (*b*) character of it, whether slowly attained or very quickly attained, and (*c*) the manner of fall. In cases of aortic valvular disease for instance with incompetence of the aortic valves, the pulse wave is very rapidly attained and as quickly disappears, giving a very characteristic pulse. The general characteristic of this rate is well shown on the sphygmographic tracing. Observe that the pulse rate is fairly regular both in time and character, but the character of the pulse is quite different from the normal. This tracing should be compared with a similar tracing from a case of advanced mitral disease. Observe that the amplitude of the pulse is very much less, and that the irregularity both in time and character is very distinct.

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* An illustration is given in the pulse tracing on page 82.

Attention should now be directed to the ease or difficulty in obliterating the pulse wave. If two or three fingers are placed on the pulse and pressure exerted with the proximal finger, the pulse wave felt with the distal finger is normally fairly easily obliterated. In certain cases of disease, and more especially cases of chronic renal disease, a very great degree of pressure from the proximal finger is required to obliterate the pulse wave felt by the distal finger. In such a case we say that the blood pressure, that is the pressure of the blood within the artery, is increased. This increase of blood pressure is very frequently one of the earliest and most important evidences of organic disease.

4. The Condition of the Vessel Wall.

Particular attention should be directed to the presence or absence of thickening of the arterial wall. Healthy blood-vessels are not palpable, or at best indistinctly so. In arterio-sclerosis the vessels become thickened and often tortuous, this condition being frequently met with even in young subjects. (The clinical results of arterio-sclerosis are described in a separate section.) In cases where an aneurysm is suspected, it is desirable to compare carefully the radial pulse on the two sides.

5. The Pulse as a Guide in Acute Disease.

The pulse is of great value in prognosis, and also as a guide to treatment in acute disease. Take for example a case of pneumonia that is giving special anxiety. An observant nurse will notice an alteration in the character of the pulse, revealed by an advance in its rate, by alteration in the strength, and still more by an irregularity in the time and character of the individual beats, which is very important evidence of a failing heart muscle, and a guide to the necessity for the use of special stimulating measures.

ARTERIO-SCLEROSIS.

It is a true and a trite saying that a man is as old as his arteries. Some men and women of fifty years of age are in reality twenty years older ; the converse is equally true ; we occasionally see men of sixty or seventy years of age whose arteries and tissues generally might be envied by men fifteen or twenty years younger. When arteries get old they lose their resiliency ; their walls become thickened, so that ultimately they may become rigid tubes—in place of soft elastic vessels. In healthy old age the vessels lose their elasticity to some extent, but a pathological degree of thickening of the vessel wall with all its attendant sequelæ is a very common clinical condition, and it may begin quite early in life.

Causes of Arterio-Sclerosis.

Hereditary influences are an important factor. Some families have a specially strong vascular system ; in others the blood-vessels are less strong and more easily influenced by adverse conditions. The disease is, however, usually acquired, and is due to one or other of the following conditions—these often existing in combination.

Hard physical and severe mental strain are important etiological factors; thus the condition is specially common among miners and others whose work involves sustained muscular effort, and also among those who lead a strenuous city life at high tension, and with business worries.

Long-continued indiscretions in feeding, more especially excess of animal protein food and excess of liquor, are another cause; closely related to the last-mentioned is the condition of auto-intoxication or a general toxæmia dependent on chronic constipation. Extraneous poisons such as nicotine from excessive tobacco smoking, and bacterial toxins from a septic focus such as carious teeth, diseased gums, or a latent uterine catarrh, play an important rôle in developing the condition.

The previous occurrence of syphilis or other infective disorders is in many cases the main determining causal factor in the disease. When once established it is maintained and exaggerated by the other factors above referred to.

Manifestations of Arterio-Sclerosis.

Arterio-sclerosis manifests itself by symptoms referred not to the vessels, but more generally to the heart, lungs, or kidneys. Not infrequently the disease first presents itself by symptoms suggestive of slight cardiac disorder. On examination it is found that the heart is dilated, this being the result of wide-spread arterial changes. In other cases the symptoms may be largely respiratory, with symptoms and signs of bronchitis and emphysema of the lungs. Emphysema is present in a marked degree in most cases of arterio-sclerosis, and predisposes to bronchitis, both of these conditions being associated with, and to a great extent dependent upon, arterio-sclerosis.

In other cases the condition first reveals itself by the occurrence—it may be in an apparently young subject—of cerebral hæmorrhage or thrombosis, occurring in a man who may never have required to consult a doctor, but who has been the subject of a steadily-advancing arterial thickening in his cerebral and other vessels with associated cardiac weakness. Some intercurrent minor illness, developing without apparent cause, such as sciatica or rheumatism, may also be the form in which arterio-sclerosis first presents itself. Its association with aneurysm and renal disease need only be mentioned.

Enough has been said to indicate the great clinical importance of the subject, and the diverse ways in which attention may be drawn to its existence.

The following cases of well-marked arterio-sclerosis may be taken as illustrations. One of these is a "heart" case, the second is a case of "sciatica," and the third a case of "angio-spasm" of a diseased cerebral vessel, the condition simulating cerebral hæmorrhage.

(*a*) A young man, a miner, admitted complaining of præcordial pain and slight breathlessness of four weeks' duration. On examination there was found a slightly-hypertrophied and dilated heart, with, for his years, marked arterial thickening and increased blood pressure. In his case the chief operative factors had probably been excess of tobacco—five or six ounces a week,—constipation, and excessive indulgence in animal food, which he took at least thrice daily.

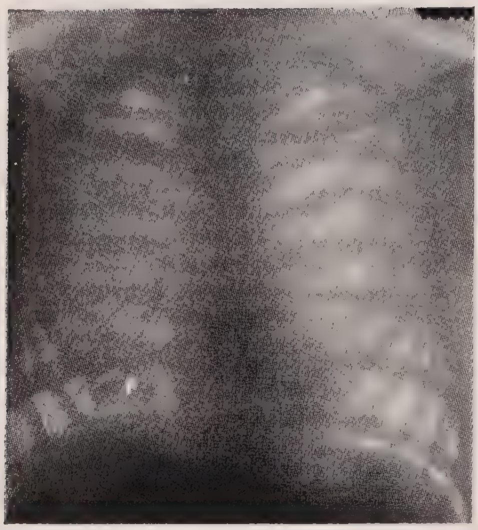
(*b*) The second case is that of a woman aged thirty suffering from sciatica of some months' duration. On examination the most striking clinical conditions present were the marked degree of arterial thickening, and the existence of constipation and very offensive stools. There was good reason to believe that the toxin or toxins, which had long been operative in inducing this arterial thickening, have lately been responsible for the neuritis of the sciatic nerve. In this case we believe the causes were constipation and the presence of teeth deficient in number, and very defective in character, combined with long-continued injudicious feeding.

(*c*) Man aged fifty-eight, admitted five days ago unconscious with the following history :—

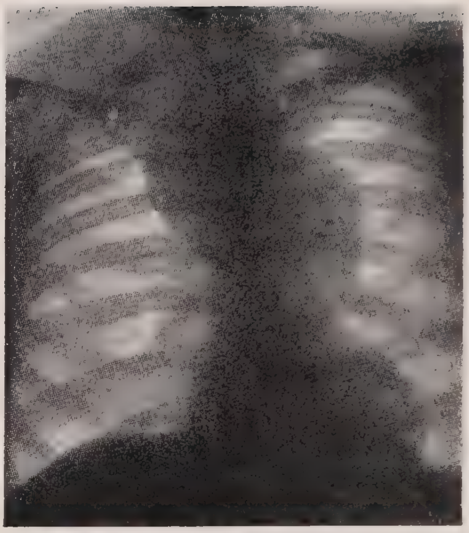
He was sitting at the fireside one night when his wife noticed that his speech was a little thick, and he steadily became unconscious. The previous history showed that the man had led a hard life, and had been rather intemperate in his habits. On admission the patient was unconscious, and remained so for a few hours. On regaining consciousness his speech was a little thick and confused, and there was some weakness, but no distinct paralysis of the right arm and leg, and there was no disturbance of sensation. The blood-vessels were markedly thickened and the blood pressure raised. The urine was abundant and contained a very faint trace of albumin. The symptoms passed off in forty-eight hours. The history of the case with the rapid recovery indicated that the condition was the result of a spasm of a diseased cerebral vessel—so-called angiospasm ; such cases very closely simulate cerebral hæmorrhage and cerebral thrombosis. From their nature they are less serious, but the outlook for the future is always guarded.

General Treatment.

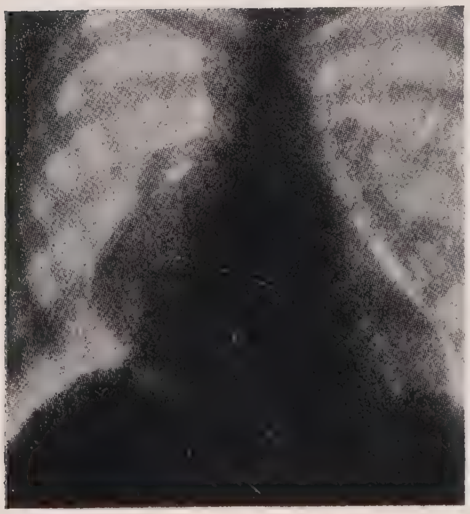
The basis of treatment is prophylactic. Keep in view the various causes which tend to induce the condition and remove them so far as possible. Above all, promote judiciously free elimination by the bowels, kidneys, and skin, and see that the patient is provided



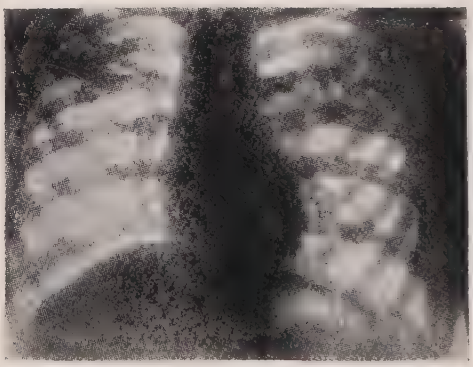
Radiogram of normal heart. Note shape and size of the heart and aorta.



Radiogram of aneurysm of aorta. Note the great enlargement of the aorta.



Radiogram of enlarged and dilated heart (mitral stenosis). Note the enlargement of the heart and altered shape, the enlargement being chiefly of right side.



Radiogram of chest showing bilateral pulmonary tuberculosis. Note the dark areas of affected tissue in the middle of both lungs.

To face p. 65.

with a thoroughly clean and useful set of teeth and appreciates the importance of using them.

The details of the treatment are further considered under various headings, such as disease of the heart and disease of the nerves, which are in many cases associated with and dependent upon the slow and insidious degeneration of the blood-vessels.

HEART DISEASE.

We have recently admitted into the hospital three typical cases of heart disease, all of them of a serious character. One of them is what is known as *a mitral case,* that is an affection of the heart associated with disease of the mitral valve, with all the symptoms and physical signs of backward pressure of the venous system. The second is a case of *disease of the aortic valves* known as aortic regurgitation, due to incompetence of the aortic valve. The third case is that of a middle-aged woman suffering from disease of the heart muscle—*fatty or fibroid heart*—there being no apparent disorder of the heart valves. These cases form an excellent basis for the consideration of the principles and practice of heart affections in general. In every case of heart disease the vital question for the patient is the condition of the heart muscle. So long as it has a fair amount of reserve, it is capable of overcoming a considerable degree of disorder, either of the heart valves, or the heart muscle itself; but when that reserve is encroached on beyond a certain point, pronounced symptoms of cardiac disorder supervene. A brief introductory note on the physiology of the circulation will be useful.

Physiology of Heart and Circulation.

There are really two hearts, the right heart and the left heart. The right heart is concerned with receiving the venous blood from the whole of the body through the superior and inferior vena cava, the blood being sent on from the right ventricle to the lungs to be oxygenated. Under normal conditions all the blood from the right ventricle is propelled onward to the lungs, but when the tricuspid valve between the right ventricle and the right auricle becomes incompetent, the right ventricle thereby becomes dilated, and the blood regurgitates into the auricle and into the veins of the neck, thereby producing a venous pulse in the neck which is very distinctive. The left heart receives the aerated blood from the lungs, and is concerned with transmitting it through the aorta towards all the organs and tissues of the body.

The left ventricle is thus the most important of the four chambers of the heart. It may be prejudiced in its action by disease of the mitral valve, *e.g.*, narrowing or stenosis, which interferes with the free access of blood into the left ventricle, or by dilatation of the mitral valve (mitral incompetence or regurgitation), which allows, during contraction of the left ventricle, of some of the blood regurgitating backwards into the auricle in place of all being propelled forwards into the arterial system. Both ventricles may be handicapped by weakness of the muscles of the wall—fatty or fibroid degeneration of the heart muscle—the result of various causes, thus interfering with an efficient pumping action of the organ.

There are other factors of great clinical importance in the maintenance of a normal circulation, over and above the condition of the heart muscle, and the condition of the blood already considered. These are the state of the venous system and of the arterial system generally. Any tendency to stagnation in the peripheral or central veins, such as are met with in cases of varicose veins of the legs, or distension of the abdominal veins often met with in obese people, indirectly affects the efficiency of the heart in an important degree. The result of this defect is most commonly seen in people who live a sedentary life, take too little exercise, and eat and drink to excess. A free and healthy movement of the diaphragm is a most important factor in promoting a free and normal venous return from the abdomen and lower limbs to the heart.

The other important factor which often prejudices the heart is a diseased condition of the arterial system, known as arterio-sclerosis, a condition characterised by undue rigidity and thickness of the arterial walls, often associated with high blood pressure ; this greatly increases the strain upon the left ventricle, tending sooner or later to dilatation of that chamber with its resulting serious defects. It will readily be understood that when the function of the heart is deranged from any cause, other organs are correspondingly distended, and this derangement is in every instance due either to the absence of a free arterial supply to the organ, or to the presence in excess of venous blood (chronic venous congestion), or to both combined.

The last point that requires consideration under this head is the readiness with which the heart's action may be directly disturbed by derangement of the stomach, and more especially by distension of the stomach by excess of air (flatulence), or excess of solid or liquid nourishment. The heart lies immediately above the diaphragm, the stomach immediately below it, and under many conditions of digestive disorder the stomach becomes enlarged, and presses upwards on the heart, producing discomfort or pain in the region of the heart, and other symptoms of cardiac derangement. It is no exaggeration to say that more than fifty per cent. of cases in which the patient refers symptoms to the heart are due to a temporary and functional derangement of the heart and circulation induced by some digestive disorder.

Reference to Symptomatology of Heart Disease.

The more common symptoms of cardiac disorder comprise pain, palpitations, breathlessness, œdema or general dropsy, and general weakness, accompanied by general pallor, cyanosis, œdema or dropsy, cough and expectoration, anuria and other symptoms. In cases where the disease mainly affects the aortic valve, pain and pallor may be very prominent symptoms. Pain complained of in the region of the heart—angina pectoris—is seen in its most typical forms in disease of the aorta and the left ventricle; the pain often radiates from the præcordia, down the inner side of the left arm. So long as there is no serious disease of the mitral valve, there may be little or no cyanosis, and no symptoms arising from backward pressure. In cases where the disease is primarily located in the mitral valve, pain may be present, though it is a less prominent symptom, the chief symptoms being dyspnœa, cough, expectoration, bronchitis, œdema, general dropsy, scanty urine, etc. In cases of primary weakness of the heart muscle unaccompanied by serious valvular disease, the physical signs may, for a time, be less pronounced, although the actual condition may be just as serious. It has to be noted that the pain referred to the præcordia, and other symptoms—suggestive of disorders of the circulation—are very often entirely induced by disorders of the stomach or bowels.

Etiology of Heart Disease.

Heart disease, and more especially valvular heart disease, is frequently a sequel to a previous attack of endocarditis of bacterial origin, and more especially acute rheumatism. In many cases it is the result of a chronic toxæmia from some neglected source of septic infection, aggravated by physical strain, excess of alcohol, excess of tobacco, constipation, and previous specific infection.

The Management of Cases of Heart Disease.

The management of the cases may be regarded from two standpoints ;—

(*a*) Palliative for the immediate relief of symptoms, and,

(*b*) Measures directed to remove so far as possible the cause. In this connection one must bear in mind that damaged valves can never be restored. Much, however, can be done to improve the condition of the heart muscle so as to enable it to overcome the extra difficulties associated with a valvular lesion or a defect in its own structure.

The three cases recently admitted form a useful basis for the systematic consideration of the main essentials in the general treatment of these conditions.

Systematic Consideration of the following:—

1. Rest in Bed.—Complete rest is one of the most important essentials in the general management of diseased conditions of the heart. You have frequent opportunity of observing how, within from twenty-four to forty-eight hours after admission, and without any special treatment other than complete rest, the pulse rate is, in many cases, reduced by ten or twenty or even thirty beats per minute, the pulse at the same time becoming stronger and more regular. Complete rest may be required to be maintained for several weeks if the best results are to be obtained. In severe cases the patient should not even be allowed up to the stool. The state of the pulse and the condition of the patient generally, more especially with regard to the amount of pain, dyspnœa, and œdema, will be a guide for the duration of complete rest. It is sometimes essential to remove a little fluid from the chest or abdomen to start the recovery.

2. Measures for the Relief of Pain.—The rest in bed is itself a useful measure in this direction. Relief from pain is often afforded by relieving the portal congestion by a dose of calomel, followed by a saline. If the pain is severe and recurs in paroxysms, relief may be obtained by inhalation of amyl nitrite, or by the administration of nitro-glycerine or sodium nitrite, and in some cases by hypodermic injections of morphia. The local application of a belladonna plaster to the præcordia, the bathing of the arms with hot water, and the internal administration of potassium iodide are other valuable measures for the relief of cardiac pain.

3. Measures for Inducing Sleep.—Sleep is Nature's restorative, and it is difficult to overestimate the importance of a good night's rest. Care and discrimination are necessary with regard to the use of hypnotics; among those most generally useful are veronal 8 to 10 grain doses, paraldehyde 1 to 2 drams. Simpler measures are often efficacious, more especially a hot drink of beef tea or chicken tea, or a little stimulant in hot water last thing at night. Great care should be taken in regard to the composition and amount of the patient's evening meal, a light meal with little fluid being given.

4. Administration of special Cardiac Tonics.—The first point to be kept in view is that all cases of heart disease do not require to be treated by digitalis or strophanthus; in fact in a large proportion of cases these drugs are unnecessary and are better withheld. Drugs of this powerful class are only necessary in severe cases, in which definite improvement does not occur under the simpler measures described. When necessary they may be given by the mouth or hypodermically; their liability to derange the stomach and digestion must be kept in view, and otherwise their use should be reduced or discontinued as soon as this can be done judiciously. In many cases the best cardiac tonic we can prescribe is to reassure the patient that their condition is not serious, or, at least, not half as serious as he imagines.

5. The Dietetic Treatment.—The dietetic treatment of a case of heart disease is of the first importance. I have already indicated that in more than

half the cases in which symptoms are referred by patients to the heart, the condition is really secondary to indigestion, relief being obtained by careful treatment directed to the stomach and bowels, by the administration of a light diet with little fluid at meals, by reducing the amount of fermentable farinaceous foods, by diminishing or cutting off the amount of tea, and by the correction of the constipation. These same principles have to be applied in the more serious cases of heart disorder. The common tendency to over-feed these cases should be avoided. The venous congestion of the digestive tract and of the liver, with its associated weakness of digestive power, should be kept in view, and the diet adapted accordingly. As a general rule the meals should be given in small quantities, largely dry, with the farinaceous foods greatly restricted, the principal meal being taken in the middle of the day.

6. Digestive System.—Attention has already been directed to the importance of regulating carefully the hepatic and intestinal functions. An occasional dose of calomel with a morning saline or a suitable vegetable laxative are of special value.

7. Massage and Exercises.—The skilled application of massage with various remedial exercises is one of the most important means of restoring the state of the heart muscle to a high state of efficiency. If the best results are to be obtained, this must be carried out daily under supervision with a carefully devised prescription, the effect of massage and exercises on the state of the pulse and on the general symptoms being carefully ob-

served. The massage and exercises can often be advantageously combined with effervescing baths (so-called Nauheim treatment), the patient being immersed from fifteen to twenty minutes. The benefits obtained from these baths are partly physical and partly mental, but in appropriate cases the beneficial effects are undoubted and of the greatest value.

The after-treatment of cases of heart disease is important. This involves very careful regulation of the life of the patient generally, diminishing the physical and mental strain as much as possible, with careful regulation of the bowels and continued care with regard to diet, at the same time doing everything possible to encourage the patient to think about his condition as little as possible. The occasional use of a muscle tonic, —*e.g.*, arsenic, for a few weeks is advantageous.

ANEURYSM.

An aneurysm is a dilatation of a blood-vessel, most commonly affecting the arch of the aorta. The swelling or tumour may reach a large size, and produce numerous symptoms most of which arise from the pressure of the tumour on the surrounding structures. We have in the ward at present a case of aneurysm of the arch of the aorta which presents most of the clinical features seen in such cases. The history is as follows :—

C.D., aged forty-five, brewers' lorryman, admitted to hospital complaining of pain in his chest, and occasionally in the upper dorsal region with breathlessness on exertion —of about two months' duration. He has lived a life of severe physical strain, has indulged very freely in alcohol, and many years ago he became affected with syphilis. The diagnosis of the case was established by an examination with the X-rays.

Causation.

The main causes of aneurysm are syphilis, strain, and alcohol, all of which were present in combination in this case.

Symptoms and Physical Signs.

The symptoms of which the patient first complains are as a rule breathlessness especially on exertion, general weakness, and a varying degree of pain in the chest or back, often described as of a boring character. The symptoms are often those which are characteristic of heart disease.

On physical examination the enlargement of the aorta can be made out, sometimes by inspection which may reveal pulsation of a distinctive kind, but more frequently by percussion by means of which we can determine that the area of dulness of the aorta is considerably extended. In doubtful cases the diagnosis can be cleared up by means of the X-rays, which enable one to determine the existence of an aneurysm, its size, and the particular part of the arch of the aorta which is most affected. In the above case it is the transverse part of the arch of the aorta which is most affected. All the structures in immediate relationship to the arch of the aorta may be pressed upon with resulting symptoms and physical signs. Thus the bone of the sternum or the vertebræ may be erroded by the aneurysm, pressure on the bone being the most common cause of the pain complained of. Various blood-vessels may be pressed upon, giving rise to inequality of the two radial pulses, and distention of the veins on one side of the neck. The recurrent laryngeal nerve which winds round the root of the aorta may be pressed on, inducing a paralysis of the vocal cord on the affected side with a characteristic brassy cough. The deep veins on one side of the chest may be obstructed, producing marked œdema of the affected arm; the sympathetic nerve may be irritated, producing dilatation of the pupil on the affected side, and the root of the lung on the one side may be pressed on, producing cough, difficulty in breathing, and characteristic signs on auscultation of the chest. In exceptional cases the thoracic duct may be obstructed, this accounting for the distinct emaciation which is present in some cases.

Prognosis.

The prognosis in cases of aneurysm is always guarded. The affected subjects are permanently more or less crippled. The natural process of cure of an aneurysm is the establishment of a healthy clot inside the vessel: this occurs in some cases spontaneously, and in others under the influence of treatment. In less favourable cases the aneurysm may rupture, death being due to a fatal hæmorrhage which may occur into the chest or externally. Apart from the condition of the aneurysm, the prognosis has to be guarded on account of the associated weak condition of the heart muscle, sometimes combined with valvular disease of the heart, which is often present in cases of this disease.

Treatment.

Treatment has to be directed towards promoting the natural cure of the aneurysm by establishing a healthy clot inside the vessel. To this end the most important factor is prolonged rest in bed, the rest being as complete as possible. The diet must be light and dry, little fluid being given with meals. Any straining at stool must be prevented by the administration of suitable aperients. The clotting of the blood is favoured by the internal administration of potassium iodide, which has to be continued for a prolonged period.

CEREBRAL HAEMORRHAGE, THROMBOSIS, AND EMBOLISM.

(*Syn.* STROKE.)

We will now consider the clinical condition popularly termed a "stroke." This arises from an acute derangement of the cerebral circulation which may take one or other of the following forms :—

(*a*) Rupture of a cerebral vessel—Cerebral Hæmorrhage.

(*b*) Thrombosis in a cerebral vessel—Cerebral Thrombosis.

(*c*) Embolus in cerebral vessel—Cerebral Embolism.

(*d*) Spasm of cerebral vessel—Cerebral Angio-spasm.

The condition of cerebral hæmorrhage, cerebral thrombosis, and cerebral angio-spasm are essentially diseases of adult and later life. Cerebral embolism on the other hand, depending as it does on the carriage of a vegetation from the heart valve or a piece of clot from the heart chamber, is not infrequently seen in younger subjects affected with heart disease.

Causation.

Cerebral angio-spasm, cerebral hæmorrhage, and cerebral thrombosis are the result of disease of the blood-vessels (Arterio-Sclerosis). The vessels become thickened and less resilient than normal, the smoothness of the lining membrane being impaired, with the result that the vessel becomes liable to a sudden contraction due to spasm, to an actual rupture, or to clotting of the blood within its lumen. This diseased condition of the vessel-wall is often associated with a great increase of blood pressure, the pulse tension being high, with other evidence of chronic Bright's disease. Reference has already been made to the fact that cerebral embolism is liable to occur in patients affected with disease of the mitral and aortic valves. A small vegetation from the valve, or a part of a thrombus in the chamber becomes detached, and is carried through the aorta and carotid artery into the middle cerebral artery, blocking this vessel or one of its branches. The left middle cerebral artery is, on anatomical grounds, more likely to be affected than the right. Any blocking of the middle cerebral artery on the left side produces paralysis on the opposite side of the body, since the cells and fibres controlling the muscles on one side of the body come from the opposite side of the brain.

Manner of incidence of a stroke.

A stroke may occur with dramatic suddenness, the patient having apparently been in his usual health up to the moment of its occurrence. In many cases, however, there have been certain premonitory symptoms. For a short time—a few hours or a few days—the patient has been complaining slightly of certain minor symptoms, such as headache, giddiness, or peculiar feelings in the arm or leg. Premonitory symptoms are usually present in cases of cerebral thrombosis. They are never present in cases of cerebral embolism, and very rarely also in cases of hæmorrhage. The manner of incidence of the stroke thus yields information of diagnostic value as to its cause.

Symptoms.

The symptoms will necessarily vary in accordance with the size of the vessel and the area affected. As the left middle cerebral artery is the vessel most frequently affected, it will be convenient to discuss the symptoms observed in an average case of right-sided hemiplegia due to hæmorrhage.

Man, aged forty-eight, was in his usual health, when he fell down in a fit, became unconscious, and was brought into hospital. His previous medical history was satisfactory; he had, however, worked hard and lived well, eating liberally, drinking rather more than was good for him, and smoking immoderately. He was a man of stout build and plethoric habit.

On admission patient was unconscious, breathing stertorously. The angle of his mouth was drawn up on the left side, the muscles of the lower part of the face on the right cheek also moved much less freely on inspiration than the left. Pupils were equal and slightly contracted. The right arm and right leg were found to be completely flaccid, no resistance whatever being offered to their movement. The tension of the pulse was high, the heart was found to be enlarged, and there was a trace of albumin in the urine. This history and the physical signs pointed clearly to the case being one of cerebral hæmorrhage occurring in a man with arterial sclerosis and chronic renal disease. The case is instructive, as showing the insidious nature of a serious disease, the development of which is due very largely to preventable causes—over-eating and over-drinking, combined in many cases with excessive physical and mental strain. When the patient recovered consciousness, it was found that the sensation on the right side was distinctly impaired, but not entirely absent. Obviously the hæmorrhage was in a position to involve the sensory fibres in the brain as well as the motor fibres—the site of the lesion being the internal capsule.

Diagnosis.

The diagnosis is as a rule easy, especially in cases where the history of the case is known. When the history is not known, some difficulty often presents itself, and we must keep in view all the conditions which bring about unconsciousness.

The diagnosis of " stroke " is always easy, if the symptoms of paralysis are clearly marked.

Prognosis.

The outlook for the patient depends on the severity of the lesion and its cause. Much depends on the degree of the recovery in the first three or four days. The most favourable results occur in cases due to angiospasm. Here the symptoms may all pass off within a few days, leaving the patient little or none the worse, though very liable to recurrence. Recovery in the case of cerebral thrombosis is seldom satisfactory, if the thrombosis is at all complete ; a more satisfactory recovery follows a partial thrombosis, the circulation in the vessel becoming restored. The outlook in cases of cerebral hæmorrhage and embolism is always very guarded. After a hæmorrhage there may be a distinct improvement which may mislead; this improvement being due to disappearance of the œdema and irritation around the hæmorrhage. In the case of a right-sided hemiplegia of average severity, the outlook for complete recovery is always unfavourable, marked permanent weakness of the affected side usually remaining. The patient subsequently has a distinct hemiplegic gait, and is very liable to secondary contracture of the paralysed muscles. There is always the further risk of a recurrence of the hæmorrhage, thrombosis, or angiospasm, the risk being in great part proportionate to the extent of the disease of the arteries, heart, and kidneys present.

Treatment.

The treatment requires to be considered from two points of view—the immediate and the remote treatment. With regard to the immediate treatment, we have to keep in view the immediate risks to which the patient is subject. The first and most important is the risk of extension of the hæmorrhage or thrombosis, this extension taking place towards the base of the brain and affecting the vital centres, and death superseding within an hour or so of the stroke. The second risk is the development of bronchitis or pneumonia, arising from inhalation of septic matter from the upper part of the respiratory tract. A further risk is that of sepsis, arising from decomposition of urine, retention of urine, and incontinence of fæces in severe cases. Yet another point which has to be guarded against from the outset is the development of bed-sores. In view of the low vitality of the tissues resulting from the removal of the normal nerve influences regulating their tone, bed-sores are specially prone to occur. Keeping these points in view, therefore, we may now summarise the essential points in treatment.

1. Keep the patient perfectly quiet at complete physical and mental rest, often in a shaded room for some time, after consciousness has returned.

2. Strict hygiene of the nostrils, gums, and tongue, so as to lessen the risks of an inhalation bronchitis, or pneumonia.

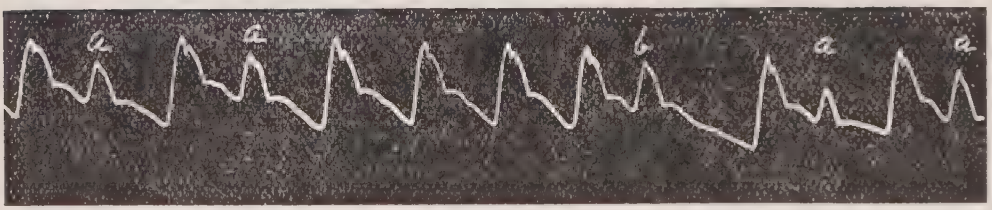
3. Careful attention to the bladder, the water to be drawn off with great care periodically as required.

4. Clear the bowel well out either by means of enemata, or, in sthenic cases, by the administration of one or two minims of croton oil.

5. Prophylactic treatment directed to harden the skin against bed-sores.

6. With regard to feeding: no harm will accrue in most cases from withholding food altogether for one or two days, after which nourishment may be given, by the bowel if necessary, or by the mouth when practicable.

A few days usually suffice to give an indication of the future progress of the case. If the patient survives, measures must be taken to maintain the nutrition of the paralysed muscles, and to prevent a secondary contracture which is liable to develop. At the same time measures must be taken to promote as far as possible absorption of the effused hæmorrhage or clot, and to remove so far as may be practicable the causes of the arterial sclerosis. These measures may be effected by the very careful application of massage, with passive movements, to the affected limbs, the duration and severity of the application being regulated with great care. As a rule, massage of the requisite gentle character can be begun within a few days of the onset of the illness. The internal administration of iodide of potassium is often helpful in promoting absorption of the hæmorrhage. Special care must be maintained in regard to the regulation of the bowels, a mercurial pill followed by a morning saline being specially advantageous. The diet must be of a light, non-stimulating kind, with little or no alcohol. The line of treatment subsequently is that laid down for arterio-sclerosis, chronic nephritis, or the heart conditions which are usually associated with the stroke.



Pulsus alternans *a a a a*, feeble pulsations preceded by a stronger beat: diastolic intervals equal. At *b*, premature contraction (extra systole) followed by prolonged diastole.

CHAPTER IV.

DISORDERS OF RESPIRATION.

BRONCHITIS.

Bronchitis is one of the commonest diseases, and is met with in every grade of severity, from a slight cold on the chest to an acute and rapidly fatal disease attended with dyspnœa, cyanosis, and collapse. It occurs as a primary disorder, and also as a secondary affection in the course of chronic nephritis, chronic heart disease and chronic lung disease. Clinically it may be considered in two main forms :—

1. Acute bronchitis.
2. Chronic bronchitis.

We will discuss these *seriatim.*

ACUTE BRONCHITIS.

Causation.

Acute bronchitis occurs as a result of exposure to cold, " catching cold " in the popular sense. This is due to bacterial action, the chill or cold depressing the vitality of the tissues, and allowing the bacteria, which are normally present in the upper part of the respiratory passages, to become pathogenic. Acute bronchitis is also frequently set up by infective fevers such as whooping cough, scarlatina, measles, and influenza. It also frequently develops as a secondary affection in chronic nephritis, gout, and chronic disease of the heart or lungs. A variety of bacteria may be responsible for the catarrh, the more common being pneumococcus, micro-coccus catarrhalis, various diplococci, influenza bacillus and others.

Clinical Features.

The condition develops like an ordinary cold, with soreness in the chest, and may be slight chilliness and a feeling of out-of-sorts generally. There is slight increase of pulse rate, respiration rate, and temperature, with dry skin, febrile urine, and loss of appetite. Cough is at first harsh and dry, and, later, with expectoration. The sputum is at first thin, watery, and frothy, and later muco-purulent. The dyspnœa is seldom pronounced when the larger bronchi only are affected. The symptoms and physical signs are more pronounced where the bronchitis occurs as an intercurrent affection in disease of the heart, lungs, or kidneys.

Diagnosis.

The diagnosis is always easy, but it is important to keep in view that bronchitis is a prominent symptom in the early stages of typhoid fever and whooping-cough ; it is further essential to ascertain whether the bronchitis is a simple primary disorder, or is secondary to chronic nephritis, heart disease, pulmonary tuberculosis, or other disorder.

Treatment.

In its simpler forms the case responds readily to the application of ordinary domestic remedies : a mustard and hot-water footbath, the application of a mustard poultice to the chest, the use of an aperient, a simple diaphoretic mixture, and a Dover's powder may be relied on to promote recovery in a few days. In more severe cases the patient may require to be confined to bed for a week or longer, and treatment conducted along the following lines :—

1. Careful regulation of the temperature of the room, avoiding draughts on the one hand and undue stuffiness on the other.

2. The application of light linseed poultices to the front and back of the chest, to relieve the distressing cough and to promote easy expectoration.

3. Where the breathing is embarrassed and the strain of coughing severe, the use of a steam-kettle producing a moist antiseptic vapour gives considerable relief. (One teaspoonful of compound tincture of benzoin to two pints of boiling water.)

4. Expectorant remedies.—At the onset much relief is afforded by the administration of ipecacuanha or antimony, and when the discharge is more free, by stimulating expectorants,—*e.g.*, ammonium carbonate and squills.

5. The diet.—The diet should be a light fever diet.

6. Oxygen inhalation, stimulants, and cardiac tonics are useful in more serious cases.

The after-treatment in cases of bronchitis is important, more especially in cases where the condition is secondary to chronic disease of the heart, kidneys, or lungs. Climate may be important, and a change of occupation may be indicated so as to lessen the strain on the heart or kidneys and minimise the chance of recurrence. Care in regard to clothing and careful habits as to eating, drinking, and smoking are indicated.

CHRONIC BRONCHITIS.

Chronic bronchitis is one of the commonest disorders met with. It consists in a chronic catarrh of the lining membrane of the bronchi, and is invariably associated with and complicated by emphysema of the lungs. Like acute bronchitis it may occur as a primary disorder of the chest, or as a secondary affection in the course of chronic disease of the heart, kidneys, or lungs. It is essentially a disease of adult and later life, but is also met with not infrequently in younger subjects, especially those affected with mitral valvular disease of the heart.

The following is a very typical example of the disease, the history and physical signs alike being characteristic of the condition.

Man, aged forty-five, on admission complained of breathlessness, weakness, cough, and expectoration, the symptoms being of three weeks' duration. For many years the patient has had a "winter cough" to which he paid little heed. He has been accustomed to hard work, is a temperate man but a heavy smoker. His nutrition is somewhat poor. Pulse on admission 110 rather weak and irregular. His sleep was much disturbed by the frequent cough and expectoration. The chest was altered in shape, being distinctly barrel-shaped, showed very little expansion. of the lung, and numerous râles were audible all over more especially at the bases. There were three ounces of expectoration in twenty-four hours, being of a mucopurulent character and frothy on the top. The heart was distinctly dilated especially on the right side. The liver was slightly enlarged, and the urine was scanty.

Causation.

Chronic bronchitis is a direct result of a catarrh of the bronchial tubes induced by bacteria. Under normal conditions the few bacteria in the upper part of the respiratory tract are harmless, and do not invade the mucous membrane ; in bronchitis, they become pathogenic and produce both local and general effects. The local catarrh stimulates nature to expel the irritant by coughing. This coughing when prolonged and severe throws a great strain upon the lung, and distends the air vesicles producing a condition of emphysema. The development of this emphysema in return still further weakens the lung by impeding the circulation, this producing a strain upon the right side of the heart. The effect of this strain is cumulative, and sooner or later, through the recurrence of the bronchial attacks, the heart dilates, as in the above case, which illustrates the symptoms and physical signs of a dilated heart, the symptoms being proportionate to the degree of the dilatation. The dilatation of the right heart induces a backward pressure in the venous system, which in the later stages is revealed by enlargement of the liver, by diminution of the quantity of urine (which may contain albumin), and by slight or marked œdema or general dropsy.

The existence of valvular heart disease, arteriosclerosis, chronic renal disease, or chronic pulmonary tuberculosis are marked pre-disposing causes of chronic bronchitis.

Clinical Features.

In its slighter degrees chronic bronchitis manifests itself by a slight cough and expectoration, with marked liability to colds. In more severe cases, owing to the secondary involvement of the heart, the symptoms become much more pronounced as in the above case. The cough, expectoration, and the slight breathlessness on exertion become very much more pronounced, owing to the failure of compensation of the right side of the heart, and the resulting development of the symptoms and physical signs of backward pressure. The symptoms include: general weakness which may be pronounced, great breathlessness on exertion, and possibly œdema of the feet and legs. The physical signs include: cyanosis, an enlarged dilated heart, with weak heart sounds and possibly murmurs of incompetence, a weak, rapid, and often irregular pulse, marked emphysema of the lungs, copious expectoration, râles present all over the chest, and scanty urine which may contain albumin.

Prognosis.

In slight cases the prognosis is good if the patient's social circumstances are favourable. In severe cases it is more guarded. The prognosis is chiefly influenced by age, the social circumstances of the patient, the severity of the lung mischief, and the degree of involvement of the heart. In the case mentioned the outlook for the future was a very guarded one, because the social conditions of the patient were not very favourable, the emphysema was very pronounced and remained a permanent weakness after the immediate attack subsided, and also because the pulse was rather weak indicating a distinct degree of permanent cardiac disability.

Treatment.

Keep in view the principles of treatment which are as follows :—

(*a*) To restore the tone of the heart and circulation by securing adequate rest.

(*b*) To relieve symptoms and give relief to paroxsyms of coughing, dyspnœa, and sleeplessness associated with the disease.

(*c*) To diminish the bacterial activity in the respiratory tract and at the same time increase the resistance of the blood and tissues to the infecting organisms. This may involve the use of vaccines.

(*d*) To maintain the general strength of the patient by suitable feeding and careful regulation of the excretory functions.

In the case of the patient referred to above, practical application was made of these principles in the following way :—

1. Complete rest in bed for a fortnight.

2. Insomnia was relieved by an occasional dose of paraldehyde (two drams), and veronal (eight grains). For two days light jacket linseed poultices were applied to the front and back of the chest, which was subsequently kept warm by light jackets of cotton wool.

3. A tonic was given containing small doses of digitalis, ammonium carbonate, and senega to steady the circulation and promote expectoration.

4. Diet.—Little fluid was given with meals, red meats were withheld, and no food of any kind given after seven o'clock p.m.

5. A mercurial pill at night followed by a morning saline was given occasionally in ten ounces of hot water the first thing in the morning. The hot water alone was repeated in the middle of the forenoon.

Under these measures the condition of the patient improved very markedly in a fortnight, his nights became good, his breathing much better, the expectoration greatly reduced, and the heart and pulse considerably improved. If the further progress of such a case is not equally satisfactory and the cough and expectoration remain troublesome, a further bacteriological examination of the sputum must be made with the view of preparing a vaccine. In many cases the careful administration of a vaccine is of very great value in relieving the symptoms and diminishing the subsequent susceptibility to fresh "colds." Some skill and experience is required to regulate the doses or frequency of the vaccine administration if the best results are to be obtained. Careful attention has to be directed to any local reaction at the site of injection, and to the general reaction, including the effect on the cough, expectoration, and physical signs in the chest.

PNEUMONIA.

There are two varieties of pneumonia: one in which the lobes of the lung are affected by a characteristic inflammation—lobar or croupous pneumonia; the other affecting the small lobules of the lung in relation to the terminal bronchi—broncho-pneumonia or catarrhal pneumonia. The two conditions are essentially distinct both in their pathological and clinical features. The term pneumonia is more commonly restricted to the first variety. We will now discuss them *seriatim.*

PNEUMONIA.

Pneumonia, or as it is perhaps more correctly called pneumonic fever, is a specific infection of the system by a particular micro-organism called the pneumococcus. It is an eight-day fever, the inflammation running its course in favourable instances in eight days, the temperature falling suddenly on the eighth day. The most distinctive pathological and clinical feature of the disease is as a rule the inflammation of the lung; but there are many exceptions to this rule. There are many cases of pneumonic fever in which the general constitutional symptoms are very pronounced, though the amount of lung involved is small. The disease is essentially one of adult life. The exciting cause of the disease, the pneumococcus, is usually present in the upper part of the respiratory tract in healthy people, and it is only under some adverse condition, which lowers the resistance of the system, that the organism assumes pathogenic properties.

Clinical features.

The disease sets in suddenly as a rule with a chill or rigor, and it may be, sickness with vomiting. This is accompanied by fever, increased pulse rate, hurried respiration, and very frequently pain in the affected side, more especially when the patient attempts to take a deep breath. Distension of the alæ nasi, with movement on respiration may be observed. In many cases there is a characteristic herpetic eruption round the mouth. On physical examination, at the outset there may be little manifestation except the general evidence of fever, shown by quickened respiration, increased pulse rate, flushed skin, febrile tongue, and concentrated urine. In a day or two the physical signs of lung disease are developed in typical cases, consisting of consolidation of the lung, altered breath sounds, with marked pleurisy and expectoration of a peculiar prune-juice character which accompanies a short and painful cough. In a typical case there are few clinical pictures more distinctive than that of the patient at the height of the illness—*e.g.*, about the fifth day. The pulse rate will be found to be about 120, the pulse full, bounding, and soft in character, and the respirations 45 to 50 per minute.

Diagnosis.

The diagnosis is as a rule easy, but in exceptional cases there is difficulty. The following conditions may be simulated : cerebro-spinal meningitis, typhoid fever, and appendicitis. (The pain induced by an inflamed pleura is sometimes referred to the appendix region, and, conversely, the pain induced by an inflamed appendix may be referred to the lower part of the right side of the chest.)

Prognosis.

The prognosis is usually favourable in healthy subjects, but in patients who have been addicted to alcohol the outlook is much more unfavourable. Subjects who have been in the habit of taking liquor to excess are very prone to develop pneumonia and to succumb to its effects. The chief risk is that of heart failure, the right side of the heart being especially embarrassed by the obstruction in the flow of the blood through the solidified lung. Other risks are the development of abscess and gangrene of the lung, and there is the additional risk of imperfect resolution of the inflammation with the later development of tuberculous mischief. Cases in which the pulse rate exceeds 120 must always be looked upon with suspicion, and if that is associated with failure on the part of the blood to produce an adequate number of white blood corpuscles to cope with the infection, the outlook is all the more grave.

Management.

In straightforward cases of pneumonia in healthy subjects, the general treatment consists in careful nursing, with a policy of masterly inactivity on the part of the doctor. The disease tends to right itself. Complete rest, warmth, encasing the chest in cotton-wool, attention to the skin and bowel, a milk régime with ample fluid to drink to flush out the system, and a simple diaphoretic and diuretic mixture, are all that is required throughout. Details regarding feeding will be found in the chapter on "Diet in Fever." Where the pain and the cough are severe, relief is afforded by linseed poultices. In cases of robust people—so-called sthenic cases—relief may be afforded by blood-letting, the abstraction of from six to eight or ten ounces of blood from the vein of the arm. Special stimulation may or may not be required. Where necessary it may take the form of small doses of ammonium carbonate, which is a useful stimulant to the circulation, also a special heart tonic such as digitalis or strophanthus, as prescribed by the doctor, and stimulants in the form of whisky or brandy. The condition of the pulse is the most reliable guide to the necessity of stimulant. Stimulants in the form of alcohol are not now employed in the treatment of pneumonia to anything like the extent of former years.

After the crisis, which takes place as a rule on or about the eighth day, is over, the condition of the patient very rapidly improves, but prolonged care should be taken in the convalescence, and in all cases where there is any indication of defective clearing up of the lung condition, special attention should be devoted to the systematic use of breathing exercises to restore the normal lung functions.

BRONCHO-PNEUMONIA.

Broncho-pneumonia is a serious affection, more especially at the extremes of life. It is a form of pneumonia which is most commonly observed in children and in elderly subjects. It is caused by infection by various bacteria, the pneumococcus, the influenza bacillus, and other bacteria which are found normally present in the upper part of the respiratory tract. It is not an eight-day fever ; on the contrary it may last many weeks. It does not terminate by crisis, as in the case of most cases of croupous pneumonia, and there is a special risk of the subsequent development of pulmonary tuberculosis.

Management.

The principles underlying treatment are the same as those outlined for croupous pneumonia. The more free use of stimulants is frequently indicated. In troublesome cases relief to the breathing is afforded by the use of a steam-kettle with mild antiseptic, *e.g.*, half a teaspoonful of compound tincture of benzoin to a pint of hot water, and in the case of children very special attention should be devoted to breathing exercises during convalescence. If this point were thoroughly attended to, there would be fewer cases of pulmonary and other forms of tuberculosis following on the bronchitis and broncho-pneumonia so commonly present in measles and other infectious diseases in children.

ASTHMA.

The term asthma was originally applied to every form of dyspnœa, and it covered cases of dyspnœa occurring in the course of cardiac disease, renal disease, or diseases of the blood. The term is not now applied to such cases, but to a special affection of the bronchi associated with changes in the mucous membrane, and attacks of dyspnœa of a special type.

Origin and Cause.

Asthma may develop from a bronchial catarrh, in the course of which a sudden paroxysm of dyspnœa occurs, which may last for many hours. The character of the attack is distinctive. It frequently occurs during the night. Occasionally the paroxysm develops without apparent cause, though in such cases it can usually be attributed to indigestible food, emotion, or excitement. It is frequently associated with a catarrhal condition of the nose in hay-fever.

The course of the disease is very variable ; it tends to recur at shorter or longer intervals, and persists throughout life. In severe cases it becomes complicated by emphysema of the lungs, which tends to shorten life. Some cases make a good recovery, the disease apparently disappearing.

Symptoms of an attack.

The patient is usually wakened during the night by severe dyspnœa and wheezing ; sleep is impossible. The patient sits up in bed with head bent forward and shoulders raised, so as to give the extraordinary muscles of respiration the best chance of acting. The countenance is anxious and pale, with slight cyanosis, and the face is often bedewed with cold perspiration. The pulse is frequent and small. On examining the chest, the extraordinary muscles of respiration are found in full play, the expiration being markedly prolonged. There may be numerous bronchitic signs over the chest. When the expiration subsides, opalescent masses of mucus are usually expectorated. The paroxysm may last half an hour or much longer. There is every degree of severity between very slight cases, and those of a very severe character. The confirmed asthmatic patient usually loses flesh.

Etiology of the condition.

Indigestible articles of diet, or a hearty meal taken late in the day, are often responsible for an attack. Constipation is also an important factor. The inhalation of an irritating substance is the predisposing cause in some cases—*e.g.*, fog, smoke, irritating gases, or even the smell from different animals. Habit has an influence both in the occurrence and the form of the attack. There is great variability however ; a place which invariably brings on attacks in one sufferer may be found to suit another admirably. In many cases there is a hereditary history, a neurotic tendency being doubtless an important predisposing cause.

Diagnosis.

Asthma must be differentiated from the paroxysms of difficult breathing met with in chronic renal and cardiac disease. The concomitant symptoms usually prevent these being mistaken for asthma. The diagnosis between bronchitis with dyspnœic attacks and genuine asthma, complicated with bronchitis and emphysema, is sometimes more difficult. Assistance in diagnosis is obtained from the history of the ailment, the nature of the expectoration, and the results of careful bacteriological examination. A careful investigation should always be made for a peripheral source of irritation, which is most usually found in the nose, in the digestive tract, or sometimes in a faulty uterine condition.

Prognosis.

The outlook for an asthmatic patient varies with the age of the patient, the severity of the condition, and the association of emphysema with cardiac embarrassment.

General Treatment.

From the above it will be evident that the first essential in all cases of asthma is a very thorough examination of the patient, to ascertain whether or not there is any peripheral source of irritation of a mechanical or toxic kind, special attention being directed to the condition of the nose, digestive tract, and, in women, state of the pelvic viscera. Whilst adopting means for the cure of the condition, that is for the prevention of the attacks, alleviation of the paroxysms requires attention. The remedies of special value are: the subcutaneous injection of adrenalin solution, or the inhalation of nitrites, and more especially nitrite of amyl, also smoke derived from the burning of a large number of substances in the form of powders and papers, most of which contain nitrites in some form. The relief afforded by the subcutaneous injection of adrenalin is very frequently of the most striking character. Belladonna and stramonium are sometimes of value when given internally; these ingredients bulk largely in many proprietary cures.

The removal of certain conditions on which the attack depends is the first point to be aimed at in the preventive treatment, and the importance of this has already been emphasised. Special remedies include a suitable climate: some find sea-air most suitable; some can only live comfortably in the country; some like dry air; others are only well when it is moist. A suitable place for each person can only be selected by experience. The prevention of constipation, avoidance of any irritation of the gastro-intestinal tract, correction of any colitis which may be present, and the careful regulation of diet, to prevent the stomach or bowels being at any time overloaded with solid food, with liquid food, or by gases resulting from fermentation, are of the first importance. In severe cases the dietetic treatment should be along the lines laid down in

"Dietetic Treatment of Heart Disease." Among medicinal remedies mention may be made of potassium iodide and arsenic.

The use of an autogenous vaccine prepared from the bacteria in the expectoration which are responsible for maintaining the catarrh, is in not a few cases attended by very gratifying results.

PULMONARY TUBERCULOSIS.

Tuberculosis is due to the invasion of the tissues by the tubercle bacillus. Infection of the system takes place through the following channels:—by air infection, by direct infection, and through milk. Milk infection is very common in infancy and childhood. Tuberculosis is acquired through faulty hygiene or insanitary and unhealthy milk supply, and is essentially a preventable disease. Its prevention is now attracting the attention of public authorities in all parts.

There are two great factors of importance in the disease, the infecting agent—the tubercle bacillus; and the soil—the human tissues in which the tubercle finds lodging. There is abundant proof that very large numbers of people, who have never obviously suffered from tuberculosis in any form, have actually a small focus of healed tubercle in their system, usually in the bronchial or other glands or in the lungs. This fact has been established over and over again at postmortem examinations. It is also confirmed clinically by the results of the application of the cutaneous tuberculin test. These people have obviously had a high degree of resistance to the tubercle bacillus, in other words the soil was unfavourable for the active growth of the organism. A natural degree of resistance to the organism is therefore a factor of the very greatest clinical importance. This quality of resistance in turn depends on two factors, firstly, the hereditary history, and the social conditions—hygienic and dietetic—of the individual. It is obvious that a child with a delicate family history, brought up under ideal open air conditions and well fed, has a greater chance than another child brought up under less hygienic conditions, who continues to drink milk infected by tubercle.

Manner of Incidence of Pulmonary Tuberculosis.

The manner of onset varies somewhat. It may be revealed for the first time by hæmorrhage from the lungs. More commonly it is revealed by a chronic cough, with or without expectoration, and some general debility. In other cases the symptoms may be those of simple anæmia, indigestion, and general lassitude, no definite lung symptoms being present. Fever is usually absent; the fever which is present in cases of tuberculosis is usually the result of a mixed infection, the condition being complicated by superadded infection by various pyogenic bacteria.

The General and Local Condition.

These vary in proportion to the severity and duration of the infection, and to the extent to which the tuberculous toxæmia is aggravated by a co-infection by staphylococci or other pyogenic organisms. In a moderately advanced case, cough, breathlessness, often with pains in the chest, loss of appetite and general asthenia are prominent symptoms, these being associated with some fever, the temperature going up at night, increased pulse rate, some sweating, expectoration which may be copious and contain tubercle bacillus in small or large numbers and other bacteria. Cases in which the lung involvement is considerable are not necessarily any more serious than cases where the lung involvement is very slight. Everything depends upon the degree of the systemic intoxication, and that is determined by a survey of the general condition rather than by the state of the lungs alone.

The Prognosis.

The prognosis depends on various factors, but chiefly on the degree of systemic disturbance. The two most important factors in prognosis are the state of the digestion and the condition of the circulation. If the digestion is little disturbed and the patient can digest and assimilate food well, the prognosis is, as a rule, favourable. Conversely, if the digestive system is involved and the appetite feeble or capricious the outlook is more guarded. Similarly, cases where the heart's action is rapid, associated with a quick feeble pulse are, as a rule, unfavourable, as this shows that the poison has damaged the heart muscle. Other points of value in the prognosis are the family history and the social circumstances of the patient. If the family history is favourable and the patient has the means available to do the best to promote recovery, the outlook is naturally much more favourable than when the reverse holds good. A typical example of pulmonary tuberculosis in moderately advanced degree is now in the ward. Her history and condition is as follows :—

Girl, aged twenty, sent into the ward for the treatment of indigestion ; known to have suffered from a weak chest for at least four years. The patient complained for some months of loss of appetite, distaste for food, and feeling of distension after food, with slightly increasing loss of weight. Eighteen months ago she was in a sanatorium for some months, but the improvement made was not maintained. For the last month or two her voice has been somewhat husky due to a catarrhal condition of the larnyx.

The patient is a fairly well nourished girl, rather pale, and lips slightly cyanosed, the pulse rate runs between 90 and 100. Respirations 24 to 26, slight cough with some muco-purulent expectoration containing tubercle bacillus and pyogenic organisms in abundance. The chest is flat and shows unmistakable signs of chronic disease in both lungs ; there is no fever. The tongue is slightly dry and rather furred and reddish at the tip and edges. Examination of the abdomen reveals a general flabbiness of the abdominal wall with a little splashing on palpation in the epigastric and ileo—cæcal region. Examination with the X-rays reveals the existence of marked ileal stasis and a lesser degree of general colon stasis.

General Principles of Treatment.

Remedies must be directed in three directions :—(*a*) against the tubercle bacillus ; (*b*) against associated bacterial infection of pyogenic organisms ; (*c*) to improving the nutrition of the tissues in every way possible. All the measures commonly employed for the relief and cure of pulmonary tuberculosis are directed in one or other of these directions. Abundance of sunlight and fresh air, the latter both by day and by night is the first essential. Complete rest in the recumbent posture, preferably in the open, may be indicated or may not be advisable, dependent upon the amount of general toxæmia, and especially upon the condition of the circulation. Abundance of good food is desirable and more especially a diet containing a suitable amount of proteins and fats, carbohydrates being given in judiciously restricted amount on account of the tendency to induce flatulence. Animal protein foods, such as meat, eggs, chicken and game are probably of greater value than the proteins of the vegetable kingdom. In cases where the digestion is capricious or weak, special care in the selection and preparation of the foods is indicated ; the forced feeding and the giving of lavish excess such as was in vogue a few years ago should be carefully avoided.

The system of graduated exercise which consists in allowing the patient to walk for ten to twenty minutes, half an hour, or longer, or do a certain amount of light work for a given time, noting carefully the effects of that exercise upon the temperature and the pulse, is of the very greatest value. There is good reason to believe that the slight increase in the pulse and temperature, which follows judiciously prescribed exercise, arises from autogenous vaccination of a kind favourable to recovery. Careful attention to the functions of the skin and bowels are necessary ; the judicious use of a cold spray has a useful invigorating action on the system. Drugs occupy a subordinate rôle in treatment ; among those that are useful may be cited quinine, hydrocyanic acid, creosote, morphia in some form occasionally, and cod liver oil and malt. Vaccine treatment should be tried in appropriate cases, and from two points of view ; (*a*) a vaccine prepared from the pyogenic organism present in the sputum ;

this may be useful for getting rid of the mixed infection which is a troublesome complication of the disease; and (*b*) the use of tuberculin to artificially raise the resistance to the tubercle bacillus.

When judiciously used vaccines are very decidedly helpful in many cases. Their use must at all times be carefully watched, the dosage and frequency of administration being determined by a careful study of the reaction. If this latter point is not attended to the disease may be accelerated rather than retarded.

It may be useful to summarise very briefly the salient points in the treatment of the case under consideration:

1. Complete rest in bed for a few weeks, and preferably under open-air conditions. Arrangements are being made for this being attained in the country.

2. Special care must be taken, in the interests of others, to prevent infection, the sputum being either immediately destroyed by burning, or carefully collected into a disinfecting solution.

3. The patient should have a room to herself, and avoid close contact with children and others.

4. The voice should be rested on account of the slight hoarseness due to catarrh. The more complete the rest the more rapid the rate of recovery.

5. Careful regulation of the bowels, and promotion of the function of the skin by means of a daily spray or "dip" followed by brisk friction.

6. Diet.—Three good meals a day should be aimed at; if this is obtainable no other meals need

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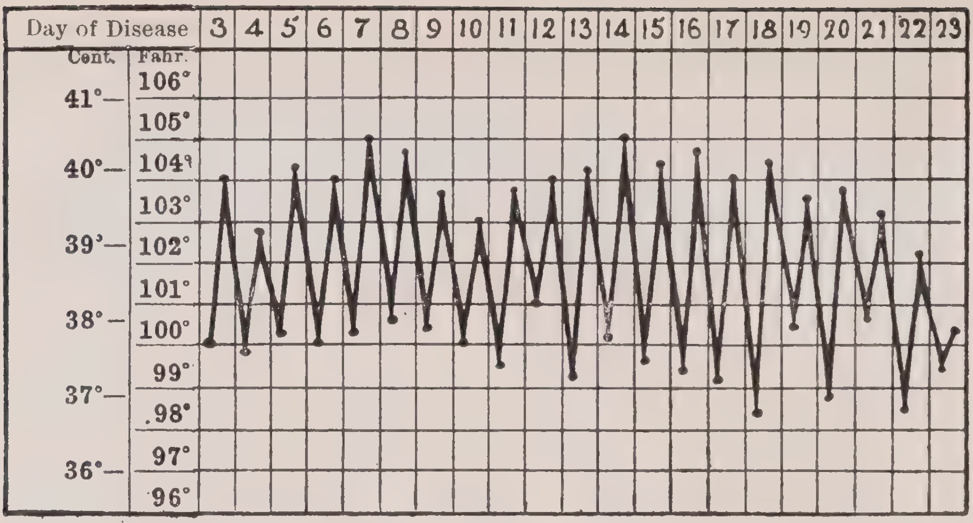
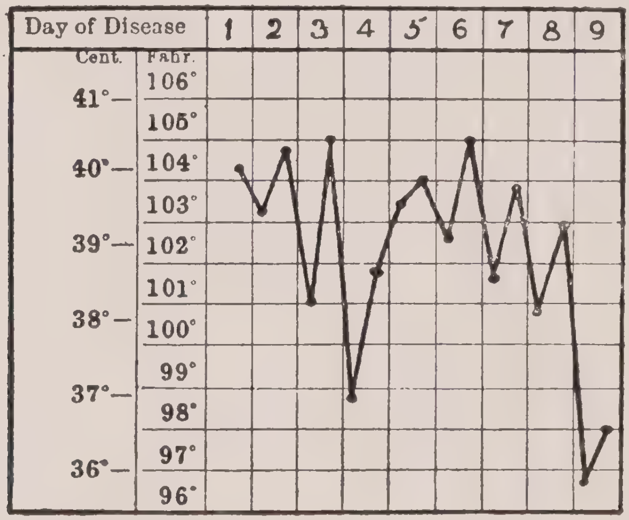
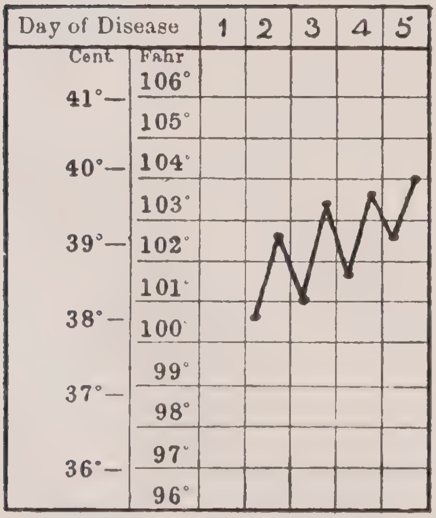


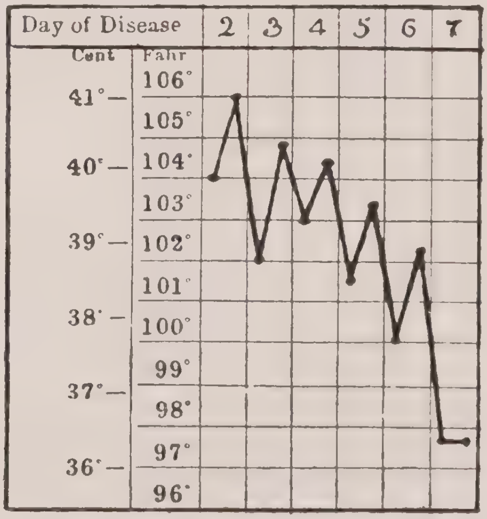
Remittent fever; from a case of phthisis pulmonaris.



Decline of fever by crisis on the 8th day;
from a case of lobar pneumonia.



Gradual rise of temperature at onset of enteric fever.



Decline of fever by lysis;
from a case of broncho-pneumonia.

be given, but if not, two additional lighter meals of the nature of snacks may be given in the forenoon and afternoon. Proteins and fats are specially indicated, more especially red meat foods, raw meat juice, eggs, and milk from unquestionable sources. Useful snacks may consist of a little hot milk and white of egg and a little sherry, or a bowl of strong meat soup.

7. Abdominal massage is valuable to improve the condition of the bowel and abdominal wall, and after a week or two's rest special value would attach to judiciously regulated walking and other exercises.

8. Vaccine treatment.—Under conditions appropriate for vaccine administration an autogenous vaccine, prepared from the pyogenic organisms in the sputum, and later tuberculin might be given in a tentative way and its effects very carefully observed.

The prognosis in this case is a guarded one. An unfavourable outlook is indicated, largely because the state of the digestive functions is not very satisfactory, and the maintained increase of pulse rate shows that the condition of the circulation has been markedly prejudiced.

On facing page will be found Temperature Charts
illustrating the various types of Fevers.

CHAPTER V.

DISORDERS OF THE KIDNEYS.

THE URINE.

I PROPOSE to-day to show you a number of specimens of urine from various diseased conditions, and to present to you the main points about the urine which it is important for you to know, if you are to follow the cases intelligently and to give the maximum assistance in their management.

Introductory note.

In health about fifty ounces of urine are excreted daily. The amount varies with external atmospheric conditions. In warm weather the skin acts more freely and less urine is voided: conversely in cold weather the kidneys are more active. Another important factor which influences the amount of urine passed is the amount of fluid ingested: if much water or other fluid be taken, and more especially if that be taken on an empty stomach, the amount of urine is proportionately increased. The great majority of people drink too little water and take it at the wrong time. If the beneficial effects of water in assisting to purify the system are to be obtained, water should be taken on an empty stomach. It is important to note and record carefully the total amount of urine passed.

Composition of the urine.

Urine consists of water containing various solids in solution. The main solid ingredient is urea, which is the end product of the chemical changes produced by the digestion of all nitrogenous food stuffs. Other important ingredients that occur in the urine are uric acid and phosphates. The normal sp. gr. of the urine is 1020. It is acid in reaction. When examined in a glass vessel, it should appear perfectly clear except for the presence of a small amount of mucus suspended in the solution, and when submitted to simple chemical analysis it should be free from albumin, sugar, blood, pus, and bile—these being the chief pathological constituents met with in the urine. It will be convenient to discuss some of the main changes in the urine. We will illustrate these by referring in the first place to the naked-eye appearances of the urine, and then shortly to the simple chemical tests which it is desirable for you to know.

Urates in the urine.

In cases of fever and in certain other disorders of nutrition, the urine presents a characteristic turbid appearance due to the presence of urates. I show you here two specimens of turbid urine, each with a copious deposit of urates. In both of these there is a fairly dense deposit of half an inch in the test tube, in the one case the deposit being of a typical brick-red character, and in the other more salmon-coloured. In both instances the urine itself is slightly turbid, due to the suspension of urates which have not yet fallen to the bottom. If the urine be shaken up and a little put in a test tube and gently heated, it will be observed that the marked turbidity completely disappears on heating. (This heat test should be applied very slowly, otherwise if albumin is present, a precipitate of albumin may form in the test tube before the urates have become completely dissolved.) The presence of urates in the urine is not a serious condition : it is only indicative of functional derangement.

Phosphates in the urine.

I show you here a specimen of a urine containing a deposit of phosphates in the form of a whitish, not very dense, deposit. This deposit is a combination of phosphates and mucus. The distinguishing chemical test for phosphates is the addition of a mineral acid. If a little of the urine is heated the phosphates are precipitated. This precipitate may be due to albumin or to phosphates. If it is due to phosphates the addition of a mineral acid such as nitric acid dissolves the precipitate ; if on the other hand it is due to albumin, the precipitate is increased by the addition of the acid. The presence of phosphates in the urine in excess is met with in some derangements of nutrition of a temporary kind, and in itself is of no great clinical significance.

Pus in the urine.

The presence of pus in the urine, or pyuria as it is termed, is a common and serious clinical condition. Pus may be present in large amount, and be visible in the form of a definite naked-eye deposit, such as that shown to you. In less marked cases it may only be revealed on microscopic examination of the urine.

The presence of pus in the urine is indicative of catarrh in some portion of the urinary tract. Its source may be the urethra, the bladder, the ureter, or the kidney: the most common causes being cystitis, urethritis, pyelitis, stone in the kidney, and tuberculous disease of the kidney. In doubtful cases, the source of the pus has to be determined by examination of a catheter-drawn specimen of urine, or by cystoscopic examination of the bladder, and by the application of the X-rays to the kidney region. I show you a specimen of urine illustrating the presence of pus in large amount, and one in which pus is present, but is only determined on microscopic examination. You will observe a solid white deposit at the bottom of the glass. On microscopic examination of that deposit, it is found to be made up of pus cells. In the other specimen, in which the pus is present in small amount, there is a very slight deposit, but the urine is turbid throughout, this turbidity being due to the presence of pus cells and catarrhal cells from the bladder, and from bacteria suspended in the urine. When a little of this urine is centrifuged, a very definite deposit is obtained in the bottom of the centrifuged tube: this deposit is seen to consist mainly of pus cells and bacteria, the condition being due to a bacillus coli communis infection.

Blood in the urine, or hæmaturia.

The presence of blood in the urine imparts a characteristic appearance. When present in large amount the urine is turbid and of a reddish colour. More commonly, when present in moderate or small amount, the urine presents a characteristic smoky tint. After standing, there is a brownish-red deposit, due to the presence of blood pigment colouring the catarrhal and other cells present in the deposit. Blood in the urine may be due to a variety of conditions: its source may be the urethra, the bladder, the ureter, or the kidney. The most common causes are acute nephritis, calculus, and a tumour of the bladder or of the kidney, either of a simple or of a malignant nature. The source and nature of the bleeding is usually determined by cystoscopic examination, by which it can be determined whether the blood is coming from one or other or both kidneys, and by the use of the X-rays. The distinctive chemical test of the presence of blood is the guaiacum and ozonic ether test. To an inch of this urine, I add two or three drops of dissolved guaiac resin: the resin is precipitated in the urine as a whitish precipitate. If I then add excess of ozonic ether, you will see in one or two minutes a marked blue ring develop: this is due to the oxidation of the resin by the hæmoglobin. The presence of blood in the urine is further determined by microscopic examination.

Bile in the urine.

The presence of bile in the urine imparts a distinctive appearance to the fluid. This varies from a slight olive-green tint, which is best seen on the surface of the fluid, up to a dense greeny-black colour. Bile appears in the urine where there is definite obstruction to the outflow of bile from the liver into the bowel. The most common causes are catarrhal jaundice, gall-stones in the common duct, and malignant disease. The distinctive chemical test for the presence of bile is the play of colours which is obtained by adding impure nitric acid to the urine. You will observe the delicate play of colours, which is obtained at the junction of the two fluids, this being due to the oxidation of the bile pigment.

Albuminuria.

Albumin is frequently present in the urine. It may be of serious import, indicative of organic disease of the kidney, or it may be of little significance, the condition being simply dependent upon a temporary congestion of the kidney. The condition, however, is not one which should ever be taken lightly; the most common conditions which give rise to it are some acute nephritis or chronic nephritis. The presence of albumin is recognised chemically (*a*) by boiling the urine, and (*b*) by the addition of a mineral acid, *e.g.*,—nitric acid. I show you two test tubes, each containing about two inches of clear urine. I heat the upper part of the fluid, and you will observe that at once there is a definite white precipitate: this must either be due to the presence of albumin or of phosphates, and we differentiate between these two conditions by the further addition of a mineral acid. I add a little nitric acid, and you will observe that the precipitate is increased. If the deposit had been due to phosphates, the precipitate would have dissolved. The second useful test for albumin is the addition of nitric acid in the cold. I show you this other tube containing an inch of clear urine. I add an equal amount of nitric acid. You now observe that there is a delicate white precipitate at the junction of the two fluids: this is indicative of the presence of albumin in moderate amount.

Sugar in the urine.

Sugar in the urine is usually found in cases of diabetes, and also in cases of glycosuria. The term glycosuria simply means sugar in the urine, and is applied to that condition of sugar in the urine in which no other symptoms of diabetes are present. This glycosuria is met with in subjects who take sugar or starches to excess. I show you a very typical example of the urine from a case of diabetes at present in the ward. You will observe that it is remarkably clear and pale, and has a curious sweet fruity odour which is characteristic. When tested with the urinometer the sp. gr. is found to be 1040 in place of 1020. This is due to the large amount of sugar dissolved in the urine. The distinguishing chemical test is the use of Fehling solution, which is a solution of copper. I take a test tube containing an inch of urine and add to it an equal amount of Fehling solution. I heat the upper part, and you will observe that the blue colour disappears and gives place to a reddish precipitate : this reddish precipitate is the result of the sugar reducing the copper salt.

Other abnormalities in the urine.

Occasionally uric acid is met with in the urine in a definite crystalline form, and is seen in the bottom of the vessel as a fine deposit resembling cayenne pepper grains. On microscopic examination these are shown to present the appearance of the characteristic yellow crystals shown to you under the microscope.

Crystals of oxalate of lime are also frequently met with in the urine, and are detected on microscopic examination. They take the form of small, whitish, clear crystals usually square-shaped like envelopes. Oxaluria, as it is termed, is frequently found in association with chronic intestinal catarrh with excessive putrefaction in the bowel.

ACUTE NEPHRITIS.

(*Syn.* ACUTE BRIGHT'S DISEASE.)

Acute inflammation of the kidney is usually the result of bacterial infection, the bacteria getting into the system as a rule from the tonsils, respiratory tract, or bowel. It is met with both in young and old people; a familiar example in young people is seen in the nephritis which develops in the course of scarlet fever. In cases occurring in adult and later years the condition is frequently not a primary infection, but is an acute exacerbation of inflammation occurring in kidneys already the seat of chronic nephritis.

As a result of inflammation of the kidneys the waste products of the body, normally eliminated in the urine, are retained in the system. The retention of the water in the system leads to the development of œdema of the tissues; this œdema may be slight, or may assume the characters of a general dropsy. The retention in the system of the solid matters, normally dissolved and excreted in the urine, induces constitutional symptoms of toxæmia, affecting mostly the nervous and digestive systems, inducing headache, feeling of lassitude, and sickness with vomiting. The symptoms frequently develop after a chill or undue exposure to cold. In the severer cases the onset may be sudden, with marked rigors, vomiting, headache, pains in the loins, gastric disturbance, and slight fever. Not infrequently the first symptom to attract the patient's attention is the development of the œdema, most marked below the eyes and face.

Objectively the following physical conditions are met with :—

1. Some swelling and puffiness of the face, most marked below the eyes, with œdema of the feet and legs, and in severe cases marked general dropsy —the skin readily pitting on pressure. The whitish waxy appearance of the skin characteristic of acute nephritis is well illustrated in many cases. Not a few cases of acute nephritis, however, occur unattended with dropsy.

2. A deficiency of urinary secretion, which may be reduced to a few ounces or less.

3. The examination of the urine shows alteration in colour, due to the presence of blood, also albumin, and on microscopic examination numerous casts of the damaged tubules of the kidney, with cells and bacteria are found.

4. Marked dryness of the skin.

5. In cases where the kidneys have previously been the seat of chronic inflammation, there are associated cardiac and vascular changes, *e.g.*, enlargement or dilatation of the heart, alterations in the pulse, and thickening of the vessel wall (arterio-sclerosis).

The patient shown to you, a man aged twenty-seven, caught a "cold" four weeks before admission, and was off work for ten days, when he returned to duty. A week ago slight œdema of the face and feet was observed, and on examination the urine was found to contain blood, albumin, and casts. For the first twenty-four hours after admission the total urine passed was six ounces.

After a week's treatment there was a marked improvement in the œdema and in the general appearance of the patient. The urine increased to fifty ounces per day, and the amount of blood and albumin, though still considerable, was much reduced. His skin became satisfactorily moist, the tongue remained furred and the breath offensive, due to elimination of toxins from the lungs. The temperature, which averaged 99.2° F. for a few days, became normal.

Principles of Treatment.

The principles of treatment are as follows:—

1. To relieve the strain on the inflamed kidney, by making the diet as light as possible, and more especially restricting strong nitrogenous foods.

2. To get rid of the waste products of the body by other channels—the bowels and the skin.

3. Where dropsy is excessive the fluid may require to be drawn off.

Before giving treatment in detail a few words may be said about the prognosis. The great majority of cases of primary acute nephritis recover under appropriate treatment. The prognosis is always more guarded in adult and later life in cases where the acute nephritis supervenes on chronic nephritis. The prognosis depends largely on the rate at which the blood, albumin, and tube casts disappear from the urine, and on the condition of the cardio-vascular system.

Treatment.

1. Complete rest in bed is usually required for many weeks, until the entire disappearance of

the œdema, and of the blood and albumin from the urine.

2. The bowels should be kept free by the judicious use of morning salines, following an occasional mercurial pill.

3. Free diaphoresis should be promoted by hot bottles, hot packs, hot air baths, and occasionally, in special cases, the use of pilocarpin.

4. Any obvious source of infection, such as enlarged tonsils, pyorrhœa, or intestinal disorder should be corrected.

5. During convalescence general tonics are of value, especially preparations of iron. Care should be taken on first going out to avoid cold winds and wet.

Diet.

In strong individuals withhold all food for the first twenty-four to thirty-six hours, but diluents to the amount of two to four pints may be given in the form of plain water, or potash, soda, salutaris, or apollinaris water; barley water, rice water, and toast water may also be given if preferred.

After this the diet should consist exclusively of milk: from one to three pints, increasing up to four to five pints in the twenty-four hours, diluted with water, as above. It will be found that milk is more easily digested when given in a small quantity, such as eight to ten ounces every one-and-a-half hours. Some patients show marked intolerance to an exclusively milk diet: such patients may be able to take buttermilk, whey, or the various pancreatised preparations. In some cases the fermented milks, koumiss and kephir, may be recommended. The constipating effects of a milk diet may be counteracted by the use of Phillip's milk of magnesia, Dinneford's fluid magnesia, or plain sulphate or citrate of magnesia. Any tendency to diarrhœa may be checked by the addition of lime water. (The total amount of urine should be carefully noted.)

If the albumin, casts, and blood persist in the urine after six or eight weeks, it may, as a rule, be assumed that there is some permanent damage to the kidney—some degree of chronic nephritis remaining, and treatment should accordingly be directed along the lines laid down for that condition.

CHRONIC NEPHRITIS.

(*Syn.* Chronic Bright's Disease.)

Chronic nephritis occurs as a sequel to acute nephritis and also as a primary affection, with a slow, insidious onset of many months' or even years' duration. The essential nature of the disease is a loss of the natural secreting elements of the kidneys, which become replaced by fibrous tissue. In its primary form it is essentially a disease of adult and later life, and is usually associated with disease of the heart and blood-vessels.

Etiology of the Disease.

There are various causal factors. Of these the most important are the accumulation in the system of excessive waste products of chemical and bacterial origin, which are met with chiefly as a result of excessive eating and over-drinking, often combined with constipation, and seen more especially in people who live a life of strain and take too little exercise. These waste products accumulate in the blood, irritate the vessel wall, and lead to thickening—called arteriosclerosis. They also strain the heart, leading to hypertrophy and later to dilatation, and induce the degeneration of the kidney, characteristic of chronic Bright's disease. Hence the clinical picture of Bright's disease usually includes symptoms and physical signs of derangement of the heart and blood-vessels, as well as actual disease of the kidneys.

Manner of Onset.

There are very great variations in the manner of onset of chronic Bright's disease. The great variety of symptoms, which are referred to systems other than urinary, often leads to a wrong diagnosis. The symptoms are the result of a chronic poisoning of the system, or toxæmia, due to the retention of waste products or toxins. The presence of these toxins affect different people in different ways; in many cases the first symptoms observed in adult or elderly people are a slight failure of physical power, perhaps associated with some loss of weight; in others troublesome headache, often accompanied by defective sight, first attract attention; the diagnosis in these latter cases is sometimes first made by the oculist when consulted on account of the eyes. Gastric symptoms predominate in other cases, more especially loss of appetite with occasional sickness and vomiting, often associated with irregularity in the action of the bowels. In others, symptoms of bronchitis are chiefly complained of, the catarrh of the bronchi being really a manifestation of renal disease. In not a few cases the symptoms remain latent, and the disease is first revealed by the development of cerebral hæmorrhage or uræmia, the latter condition being really a specially acute form of toxic poisoning. Œdema and dropsy may be present or may be absent throughout the whole course of the disease.

In a case of chronic nephritis in a girl of seventeen, the patient complained a fortnight before admission to hospital of headaches, giddiness, loss of appetite, and feeling of sickness with occasional vomiting. This was followed by slight œdema of the ankles and later puffiness of the cheeks. Nine months previously she suffered from acute nephritis, recovery from which had obviously been incomplete. The patient was fairly well-nourished but decidedly pale, rather puffy looking, with slight œdema of the feet and ankles. The urine on admission was slightly reduced, between 30 and 40 ozs., containing albumin, casts, and also traces of blood, some acute nephritis being present. The heart was slightly enlarged and the blood-vessels somewhat thickened, the blood pressure being increased. The patient was constipated.

Prognosis.

The outlook for these cases is guarded at all times, especially so in younger subjects. Their standard of health and their capacity for physical or mental effort is permanently lowered, and they are specially susceptible to unfavourable climatic conditions. The duration of life is variable. Death may supervene from cerebral hæmorrhage, due to the rupture of a diseased blood-vessel under the influence of the high blood pressure, which is frequently present. In numerous cases death occurs from heart failure, the heart dilating under the influence of the long-continued over-strain, the clinical picture being one of combined cardiac and renal disease. In other cases death occurs as a result of acute uræmia, characterised by convulsions, coma, etc.; and in others, respiratory complications—bronchitis, and broncho-pneumonia, contribute largely to the termination of life.

Principles of Treatment.

The principles of treatment are to lessen in every way possible the strain on the diseased kidneys by means of diet, and to increase the activity of the skin and bowels. Where possible, residence in a warmer climate is specially advantageous on account of its favourable effect on the skin excretion, freedom from chills, etc. Complete rest is often advisable, and often inadvisable, dependent upon the condition of the heart and circulation. A lessening of the physical and mental strain is always essential. As the condition is usually aggravated by a disordered state of the bowel—constipation—with a varying degree of catarrh of the bowel, special attention must be directed to keeping the *prima via* in a healthy condition. Similarly the state of the teeth and gums often requires correction. In cases where the œdema and dropsy does not readily disappear with rest and other measures, special value attaches to the use of a chloride free diet.

The following measures are applicable in a case of moderate severity:—

1. Complete rest in bed for a month, until the œdema of the tissues and the blood in the urine has disappeared, and the albuminuria has become largely reduced.

2. The administration of a diet for a few weeks in which all meat foods and whites of eggs are restricted, the diet being selected from milk, barley water, milk foods, bread and jellies. Later, meat foods of any kind to be taken in great moderation, white meat foods being used in preference to red meat.

3. A suitable diet, largely vegetarian in character, for a working-man who is off work, or engaged in light work only, is as follows :—

Breakfast—Porridge and milk, tea, bread and butter.

Midday—Bowl of soup (made entirely from vegetable stock), bread and cheese, macaroni, vegetables, or fruit.

Evening—Milk, egg, bread and butter, cheese or jam, and vegetables or fruit, if these were not taken at the midday meal. Eggs should be partaken of sparingly, and should not form a part of each day's dietary. White meat may later be added to the dietary, in the form of fish, chicken, tripe, or sweetbread.

In the case of well-to-do patients a good alternative dietary is as follows :—

Breakfast—Cafe aû lait, with plenty of cream; Vienna rolls or toast and butter, marmalade.

Lunch—To be selected from the following (not more than two courses to be taken): (*a*) vegetable soup, (*b*) steamed fish, fish soufflé (made up with cheese or savoury sauce), or eggs occasionally in the form of omelet or soufflé, (*c*) light farinaceous pudding or stewed fruit, with cream.

Dinner—Repetition of the midday meal, three courses, however, being allowed. Sweetbread, tripe, chicken, rabbit, or game may occasionally be allowed.

If a chloride free diet is indicated, it is obtained from the following:—milk, bread made without salt, eggs, chicken, cereals cooked without salt, butter, fruits, jellies, tea and coffee.

4. The amount of fluid to be taken must be regulated by the amount of œdema and by the state of the blood pressure, being markedly restricted in the presence of œdema and by high blood pressure. In the present instance a diet which is largely dry in character and the administration of ten ozs. of water hot or cold on an empty stomach is advisable.

5. The bowels require special attention by the use of an occasional mercurial pill and a morning saline given regularly in appropriate doses.

6. The function of the skin is promoted by hot bottles, sponging of the skin, and occasionally a liver pack or hot air bath. Warm clothing, especially for the abdomen and feet, is always advisable.

7. General tonic treatment—more especially strychnine or iron—directed to improve the appetite or counteract any anæmia present.

In cases of chronic nephritis associated with failure of compensation of the heart, prolonged treatment is necessary, and has to be largely directed to the weakened state of the cardiac muscle.

URAEMIA.

Uræmia is a convenient and comprehensive term for numerous toxic symptoms met with in the course of serious renal disease. The symptoms are due to the retention in the system of various toxic products, which should normally be excreted by the kidneys. The symptoms may affect different systems, those most affected being the nervous, digestive, and resiratory systems. The condition may present itself in an acute, sub-acute, or chronic form.

The basis of uræmia being disease of the kidney, there will frequently be present an antecedent history of acute nephritis. Very often, however, more especially in adult and later life, no such history is obtainable, the disease of the kidneys having developed insidiously, often in combination with disease of the blood-vessels (arterio-sclerosis) and heart.

The onset may occur without any warning, or there may be premonitory symptoms, such as headache, mental apathy, giddiness, nausea, and in some cases dyspnœa. The acute attack may be marked by sudden paroxysms of convulsions of an epileptiform type, which may occur with or without premonitory symptoms. In some cases these are violent and general, the whole body being shaken with convulsions, the respirations being faltering and stertorous, the patient foaming at the mouth, grinding his teeth, and passing urine and fæces involuntarily. The convulsive attack may be single and of short duration, or multiple ; one patient, a man of fifty-five years, had forty such convulsive seizures in two hours. The temperature is usually sub-normal, but exceptionally there may be a great rise. The pupils most frequently are dilated, but there is no constant change. In certain cases there are no convulsions, the acute uræmia being characterised by vomiting, and a profound general apathy, gradually passing into a deep and fatal coma. In acute cases the urine may be greatly reduced even to complete suppression. In chronic cases the urine may or may not be reduced in amount, but its examination will reveal evidence of serious disease of the kidneys.

In chronic uræmia the symptoms are referred to the *respiratory*, *digestive*, and *nervous* systems. Dyspnœa of an asthmatic type, cough, and hiccough, are the most common respiratory symptoms usually associated with some physical signs of bronchitis ; sickness and vomiting which cannot be traced to any error of diet, often combined with diarrhœa, are the symptoms of digestive disorder most frequently observed ; dull headache, giddiness, and general langour and inertia are the most common nervous symptoms. These last may pass into more severe mental derangement—a quiet or excited delirium with general motor irritability and enfeeblement. The pulse in uræmia varies with the stage of the disease. In the earlier stages the pulse may be slow or slightly increased in rate, but its chief characteristic is usually the greatly increased blood pressure. In later stages, when dilatation of the heart has set in, the pulse is rapid and may be irregular, the blood pressure usually remaining increased.

Diagnosis.

In acute cases differential diagnosis must be made from the coma met with in cerebral hæmorrhage, various infective fevers, such as cerebro-spinal or typhoid, diabetes, and alcoholism (the eclampsia of pregnancy is really a form of uræmia). In chronic cases the differential diagnosis has to be made from chronic disease in the chest or the abdomen, of a kind unassociated with renal disease.

Prognosis.

The prognosis is for the most part unfavourable; not a few cases, however, recover under appropriate treatment. The prognosis in the two cases shown to you is unfavourable, this being based on the age of the patients, the antecedent unfavourable histories, the condition of the kidneys and heart, and the pronounced nature of the nervous and mental symptoms present.

Treatment.

The principle underlying treatment is to relieve the work of the kidneys by appropriate diet, and to promote vicarious elimination of toxins by means of the bowels and skin.

The following are the essential points in the management :—

1. The promotion of warmth, and free stimulation of the skin by means of hot bottles, hot packs, and, occasionally, the use of pilocarpine.

2. Judicious free purgation, *e.g.* the occasional use of calomel, followed by appropriate saline remedies.

3. Administration of a light diet, giving at the outset the minimum amount of food in the lightest form possible. A little judicious starvation is useful. Milk and milk foods should form the staple articles of diet.

4. Venesection. In some cases the general congestion with its associated increased blood pressure may be relieved by venesection, after which the above remedies may be more efficacious.

5. If the uræmic coma is prolonged special care in nursing is essential, so as to minimise the risk of infection from incontinence of urine and of bowels, and from a septic condition of the mouth.

6. In chronic cases associated with excitement, various nerve sedatives may be called for, *e.g.*, chloral hydrate, bromide, and, exceptionally, morphia in some form.

If recovery from the acute condition takes place, prolonged convalescence is required in which the most important essentials are—

(*a*) The administration for a long period of light feeding—restriction in all meat foods, and more especially red meats, and avoiding much fluid with meals.

(*b*) Maintaining a free action of the skin and bowels, with general tonic treatment; and,

(*c*) Adapting the life and work of the patient to the weakened condition of the kidneys.

CHAPTER VI.

DISORDERS OF THE NERVOUS SYSTEM.

NEURASTHENIA.

(*Syn.* NERVOUS EXHAUSTION.)

From the modern standpoint Neurasthenia is to be regarded as a symptom of disease, rather than as a disease in itself. It means debility of the nerves, a state of nervous exhaustion, with pronounced fatigue of the nervous system.

In Neurasthenia there are two etiological factors :—

(*a*) Diminished resistance (bad heredity), and,

(*b*) Influence of strain—overwork, injury, toxæmia.

Frequently a direct physical cause can be traced, as in *Traumatic Neurasthenia*, the debility of the nervous system arising directly from an injury, or from the fear of an injury. Traumatic neurasthenia often arises as a result of fright without any recognisable physical injury having been received. Typical examples are met with in railway accidents. Neurasthenia also frequently arises as a result of prolonged physical and mental strain, or from a chronic toxæmia, due to some disorder of one or other of the mucous membranes of the body, the mouth—oral sepsis ; the bowel—constipation, colitis, or appendicular disorder ; and from derangement of one or other of the pelvic viscera.

Neurasthenia in some of its forms is very closely allied to hysteria; both of them are real diseases, and both call for great skill and tact in their management. The first essential is to keep in mind that neurasthenia is to be regarded more as a symptom of disease than as a disease itself, very careful investigation being necessary by the doctor, assisted by the nurse, to discover the main or the contributory causes of the nervous breakdown.

As in many other affections, the disease is complicated by vicious circles. In many cases, as already stated, the condition is induced by a primary disturbance of the digestive or other tract; here the weakened condition of the nervous system still further lowers the vitality of the gastro-intestinal and other secretions, and the faulty chemistry arising therefrom still further weakens the nervous system.

Symptoms.

The symptoms are of the most varied kind. In some cases the disease only affects the higher nerve centres, the physical powers of the patient being unaffected. Such a patient can walk and take active exercise with no more fatigue than other people, but he has ceased to be able to accept responsibility, or to apply his mind continuously to any one subject, active attention being one of the last acquired mental powers, and one of the first to be lost. Loss of sleep, irritability or depression, with a general loss of self-control are distinguishing features, morbid fears of many kinds are common, such as fear of being alone, travelling in a train, mixing with people in the street, and the like.

A second group comprises cases in which the fatigue affects especially the spinal nerves. Here the capacity for physical exertion of any kind is markedly reduced, the patient is chronically tired, this being associated with various aches and pains, sometimes with a definite localised weakness.

This condition is often combined with extreme coldness of the extremities, and sleeplessness; loss of self-control and depression are common symptoms. This group, much more than the former, is associated with visceral symptoms, such as constipation, flatulence, abdominal pain, and evidence of chronic colitis, and sometimes uterine trouble. Most of the cases in this group are the direct result of a chronic toxæmia.

Diagnosis.

The diagnosis is usually easy. The first point to be determined is whether there is any organic disease of the nervous system. If a neurasthenic patient is encouraged to describe his experiences and symptoms, these will, as a rule, in their variety and manner of expression, give ample evidence against organic disease of the nervous system. The symptoms of organic disease vary little from day to day, while those of neurasthenia are usually changing and recurrent.

The next point to be determined is the cause. Is there a physical basis for the nervous disorder? This involves a thorough medical investigation, more especially of the digestive tract, respiratory, and renal systems. Such investigation frequently involves an X-ray examination of the stomach and bowels, examination of the stools, and the bacteriological examination of the urine. The possibility of a latent tuberculous toxæmia has also to be kept in view.

Hysteria is a closely allied disorder, the principles of its treatment being the same. Other conditions have to be kept in view, more especially malingering, melancholia, some moral defect such as indolence and selfishness, and the early forms of Graves' disease.

A good illustration of neurasthenia is furnished by the following case :—

Mrs P., aged sixty, admitted seven weeks ago, complaining of general nervousness, sleeplessness, " trembling feelings " in the abdomen, as if her inside " vibrated," difficulty in swallowing, and general physical weakness, these symptoms being of some months' duration. She was in the hospital about a year ago for seven weeks with the same symptoms, when she made a fair recovery. She attributed her illness to a severe attack of influenza which she had two years previously. Her mother suffered all her life from " nerves."

On admission the patient was nervous, rather depressed, and very easily excited. All her bodily functions were depressed. There was no evidence of organic disease. The bowels were markedly constipated. After seven weeks' treatment the patient looks and feels better, eating and sleeping well, more vigorous physically, and complaining very much less of symptoms. Longer treatment, however, would be necessary if the best results are to be obtained.

Treatment.

The first essential in treatment is to recognise and correct any existing source of toxæmia. In some cases an operation may be necessary for the complete correction of some forms of septic mischief, *e.g.*, teeth, appendix, etc. Thereafter the most important essential in treatment is the skilled application of psychotherapy. The mental factor in treatment is all-important, the personality of the doctor and of the nurse making for rapid recovery, slow recovery, or no recovery as the case may be. The patient's power of normal self-control must be re-established. The main essentials in treatment are sympathy and tact; the patient should be treated as an intelligent being, the rationale of the treatment being explained to her by the doctor, and repeatedly reinforced judiciously by the nurse. Nothing so much retards the progress of these patients as a casual and unconsciously unsympathetic attitude on the part of those about them. They have got to be half coaxed and half compelled to recovery. Removal from home influences for a time is essential, so that complete rest from all home worries may be obtained, the patient having no opportunity of dwelling on her symptoms to unwisely-sympathetic friends. Abundance of good food is essential, but harm often accrues from giving the forced feeding at one time in vogue (Weir-Mitchell Treatment). In cases of so-called gastric neurasthenia, special attention to the feeding is required, as many of the opinions which the patient may have in regard to food are ill-founded.

The following is an epitome of the general treatment :—

1. Judicious isolation of the patient for at least four weeks. It is usually advisable for the patient not to return home directly after the treatment.

2. Careful regulation of the patient's daily régime so as to combine the maximum of rest and the minimum of ennui and self-study.

3. Simple nourishing food; three meals a day, with, in addition, a glass of milk in the forenoon (cases of gastric neurasthenia require special treatment).

4. Hydropathic measures with massage are very useful, the merits of these being fully explained to the patient. Massage with exercises for the correction of constipation is specially valuable. The personality of the masseur or masseuse is important.

5. A general tonic, *e.g.*, strychnine, arsenic, or iron.

All these measures have to be applied with skill; the nurse can render invaluable service in supplementing the influence of the physician, so as to get the best possible results in the quickest time. A combination of sympathy, a sense of humour, and tact in the application of these qualities make for speedy recovery.

UNCONSCIOUSNESS.

We have admitted into the ward lately a variety of patients in a state of unconsciousness more or less complete. In this clinique I propose to discuss the main features in the diagnosis and management of these cases from a nursing point of view. Unconsciousness may be partial or complete. We are here concerned with that condition of unconsciousness often termed coma, in which the loss of consciousness is complete. The following tabular statement of causes will serve as a useful guide :—

1. Convulsions.
2. Epilepsy.
3. Traumatism (due to injury or sunstroke).
4. Organic Brain Disease.
    - (*a*) Vascular conditions—hæmorrhage, embolism, thrombosis, angio-spasm.
    - (*b*) Meningitis (cerebro-spinal meningitis or tuberculous meningitis.)
    - (*c*) Tumours and abscesses.
    - (*d*) General paralysis.
5. Of toxic origin (poisons, *e.g.*, morphia, alcohol, haschish, carbonic oxide, and others). The toxins may be of endogenous origin due to auto-intoxication, as in some cases of chronic Bright's disease and diabetes.
6. Artificial, *e.g.*, Hypnotism or Anæsthesia.

The Differential Diagnosis.

The diagnosis is not as a rule difficult. Exceptionally, in cases where no history is obtained, a day or two may elapse before a definite diagnosis is possible. In cases where a definite history of the manner of incidence of the unconsciousness, and of the previous medical history are obtainable, the diagnosis, is, as a rule, a very simple matter. Thus if the patient is known to be affected with chronic Bright's disease or diabetes, that would be presumptive evidence of the condition being due to uræmic or diabetic coma, and this diagnosis would readily be established by the examination of the urine. Then, again, if the patient is known to have been the subject of valvular heart disease, and the unconsciousness developed quite suddenly, that would point to cerebral embolism, or possibly cerebral hæmorrhage, and if the onset was a little less rapid and attended by slight premonitory symptoms occurring in a person with obviously diseased vessels, and possibly high blood pressure, a cerebral thrombosis would be indicated.

The frequency with which unconsciousness is induced by drugs and various poisons must also be kept in view, Of these the most important are, opium in the form of laudanum, or a morphia preparation, or cocaine, chloral hydrate, haschish, carbon oxide, alcohol, lead, and some irritant poisons.

Quite recently we have seen in the wards two instructive illustrations of mistaken diagnosis. One a young man who was sent up to the Ear and Throat Department in an unconscious condition, supposed to be suffering from epilepsy with œdema of the larynx necessitating operative treatment. The incorrectness of this diagnosis was recognised, and he was immediately transferred to our ward, where he died within eighteen hours in a condition of uræmic coma. The second was that of a man admitted as a case of acute alcoholism a short time ago. The man, who was a heavy drinker was suddenly taken ill, became unconscious with a little delirium, and was sent in to the ward as a case of delirium tremens. The condition proved to be one of cerebro-spinal meningitis, from which he died in two days.

When first seen the diagnosis is often by no means easy, but mistakes will be few in proportion as one remembers the conditions which have to be excluded. It will be convenient to put in tabular form the points that have to be kept in view in the recognition of these cases :—

1. Get as complete a history as possible with regard to—
    (*a*) The conditions of the development of the unconsciousness. Carefully exclude fracture of the skull from injury, and if the breath is alcoholic ascertain if alcohol was given *since the illness started.*
    (*b*) Particulars with regard to the antecedent medical history of the patient. These, when obtainable, provide important evidence of diagnostic value. A history of epileptic fits, or of renal and cardiac disease, or diabetes, are specially important.
2. The breath and tongue of the patient should be examined for evidence of poisoning by alchohol, various irritant poisons, or diabetes. Confirmatory evidence in favour of one or other of these being looked for in other directions, *e.g.*, pharynx, pupils, urine.
3. The pupils should be carefully examined. Marked contraction of the pupils, equal on both sides, would suggest opium poisoning. In cases of severe cerebral hæmorrhage, especially at the base of the brain, the pupils are often profoundly altered, being either contracted or sometimes much dilated.
4. The urine should be obtained as a matter of routine as soon as possible, with a view to determining the existence of albumin or sugar.

5. The condition of the heart and blood-vessels are examined for evidence in favour of the condition being due to cerebral hæmorrhage, cerebral embolism, or cerebral thrombosis. A hypertrophied left ventricle with arterial sclerosis but no valvular lesion would point to cerebral hæmorrhage, or cerebral thrombosis. The presence of premonitory symptoms for a few minutes or a few hours before unconsciousness has set in would suggest thrombosis rather than hæmorrhage. The sudden development of unconsciousness in a patient with valvular heart disease would point to embolism.

6. The comatose attack may be indicative of general paralysis of the insane, a meningitis of cerebrospinal or tuberculous origin, or more rarely, disseminated sclerosis, and typhoid fever.

7. The unconsciousness may be of functional origin ; here the age of the patient, the sex, the history, and the absence of evidence of organic disease will be a sufficient guide.

Treatment.

The treatment will necessarily vary with the cause. If the condition is a serious one, and not speedily fatal, careful nursing is of the first importance. Attention has specially to be directed to the following points :—

1. Promoting the warmth of the patient.

2. Attention to the bowels and to the urine, the latter being retained for examination.

3. The prevention of bed-sores, and careful hygiene of the lips, tongue, teeth, and nostrils, so as to diminish the chance of added septic complications.
4. As soon as the cause has been determined, the treatment and general management must be directed accordingly.

PERIPHERAL NEURITIS.

(*Syn.* ALCOHOLIC NEURITIS.)

The most frequent cause of multiple peripheral neuritis is the action of some toxic substance on the nervous system. The most common form, of which we see many examples in hospital, is alcoholic neuritis produced by excess of alcoholic beverages, spirits, and beer. Other causes are lead and arsenic, the tropical disease beri-beri, diabetes, and various infective fevers, more especially typhoid, rheumatism, malaria, and dysentery. For practical purposes we may regard alcoholic neuritis as the typical form of multiple peripheral neuritis.

Symptoms of Disease.

The onset is usually gradual. The patient complains of numbness and tingling in the hands and feet. He suffers from cramp, especially in the calf muscles, the pain being increased by movement and by pressure. When the muscles of the calf are grasped great pain is induced (muscular hyperalgesia). Slight constitutional disturbances with a little elevation of temperature may be present. Soon signs of muscular weakness are noted, the feet become dropped, and the patient cannot dorsiflex them. In walking, therefore, the knees must be raised unusually high to clear the dropped feet from the ground, this producing a characteristic high-stepping gait ; occasionally the gait is ataxic ; knee jerks are usually absent ; the weakness in the legs gradually increases, until walking is impossible. Psychical symptoms are often present, such as mental confusion, impairment of memory especially for recent events, and delusions about recent actions. In some cases sensory symptoms, in others motor symptoms are most pronounced. In most cases the sensory and motor symptoms are combined.

The diagnosis of the condition is, as a rule, easy. The history with the physical signs, usually gives an unmistakable picture ; the most common error in diagnosis is to regard the sensory symptoms in the early stages of the disease as due to slight touches of " rheumatism."

Course and Prognosis.

This to a great extent depends on the history, and the stage in the disease at which the symptoms develop. Usually the termination is in partial or complete recovery, but some muscles often remain weak. In many cases, however, a fatal termination occurs, this being due to other effects of chronic alcoholism, more especially cardiac failure, pneumonia, paralysis of the diaphragm, and tuberculosis of the lungs.

Treatment.

The first essential in cases of peripheral neuritis is to ascertain the cause and remove it. The most difficult part of treatment is the correction of the alcoholic habit. In cases of alcoholic neuritis the effects of the chemical toxin, alcohol, are in nearly all cases considerably aggravated by other toxins of a chemical or bacterial nature, produced in the digestive tract as a result of damage done by alcohol. The condition is in reality a mixed one, and due regard must be paid to this when considering treatment. The treatment must be directed not only to the cure of the neuritis, but to the restoration of normal functional activity of most of the organs and tissues of the body, all of which are more or less seriously involved. In well marked cases the most important factor in treatment is the psychical one; the personality of the doctor and the nurse is of the very greatest importance in correcting the alcoholic habit, and in giving the patient much-needed encouragement for the future. This subject is further referred to in the lecture on Alcoholism.

The details of treatment may be discussed after referring to a typical case:—

A young married woman, aged twenty-eight, was admitted to a medical ward as a case of alcoholic neuritis. The history showed that she had been drinking heavily off and on for ten weeks, during which time she had been in bed practically continuously. No facts of importance were elicited with regard to the family history. Her domestic life had not been very happy. Constitutionally she appeared to be of a nervous temperament. In the course of treatment in the medical ward marked mental symptoms developed which led to her being transferred to another ward. On admission she was unable to stand or walk, and complained much of pains in the legs. Her memory was very defective, she suffered from delusions of various kinds, was rather excited and emotional, and there was incontinence of urine and fæces.

Physical examination showed her to be a small, thin woman, and rather pale. Intense pain was complained of on pressure over the calves of the legs. Knee jerks were abolished, the pulse rate was increased, and the heart sounds weak. The tongue was heavily furred, and there was very marked atony of the abdominal wall and intestinal muscles. There was incontinence of urine and fæces, the latter being extremely offensive. The general condition was a very serious one, which justified the recommendation that had been made as to her being transferred to an asylum. Under rest and appropriate treatment her condition has improved very markedly, the pains have to a great extent disappeared; there, is, however, still pain complained of on pressure. She can walk a little, but the gait is still distinctly unsteady. Her mental condition is very greatly improved, but she is still a little emotional. She has now complete control over the bladder and rectal functions. She ultimately made a good recovery.

In addition to careful nursing required owing to the incontinence of the urine and fæces, the essential points in the treatment have been as follows :—

1. Complete rest in bed for a month.

2. Special attention to the skin, by means of sponging and baths, to promote a healthier condition of the skin glands, and better nutrition of the skin generally. Strict attention must be paid to oral hygiene, any decayed teeth or septic condition of gums being corrected.

3. A light diet, consisting of milk, milk foods, and white meat foods.

4. Elimination promoted by (*a*) occasional doses of calomel, followed by a morning saline, and (*b*) diluents, *e.g.*, hot or cold water given on an empty stomach.

5. Massage. After the more acute symptoms of the neuritis had subsided, massage was applied with great care, so as to get both the sedative and tonic properties of this useful measure. In cases where the paralysis of the extensor group of muscles is pronounced, bandages and splints may be necessary to prevent deformity.

6. General tonic remedies, *e.g.*, strychnine, arsenic, and iron.

7. Mental tonics. The value of all the foregoing remedies will be enormously increased by the judicious exhibition of sympathy and tact in the whole management of the case on the part of the nurse. The importance of the mental factor in the treatment of these cases cannot be over-estimated.

DISEASES OF THE SPINAL CORD.

Introduction.

The spinal cord is the nerve trunk connecting the brain and the peripheral nerves. It is composed of nerve cells and nerve fibres. The nerve cells are located in grey matter in the centre of the cord ; the nerve fibres are arranged in columns around this grey matter. The nerve fibres are of two main groups, one conveying impulses from the periphery to the brain—sensory nerve fibres—and one conveying impulses from the brain to the periphery—motor nerve fibres. Some of the sensory nerves are concerned with the conducting of impulses involved in the sensation of *touch :* others are concerned with the impulses involved in the sensation of *heat* and *cold* ; others again are concerned with the sensation of *pain* ; and a further group with what is known as the *muscular sense*—this being the sense which enables the limbs to gauge their relationship to outside objects. The different fibres subserving these functions are localised in different regions of the cord. In some diseased conditions the motor fibres in the cord may alone be deranged ; in others, the sensory fibres are affected ; frequently both sets of fibres are involved. It is further not uncommon to find a marked impairment of tactile sensibility in a patient in whom the response to heat and cold, or the response to painful stimuli, is defective, and *vice versa*.

The nerve cells in the grey matter have three functions: they act as receiving and transmitting stations ; they receive ingoing impulses from without and transmit them to the appropriate nerve fibres in the cord going upwards ; they also act as receiving stations on the downward path, the impulses from the brain being transmitted through them to the spinal nerves. Secondly, the nerve cells control the reflexes : (*a*) they directly control the organic reflexes of the bladder and the bowels ; and (*b*) they are concerned in other reflexes of which the knee-jerk is the most typical example, these reflexes being muscular actions which are independent of the volition of the patient. If the integrity of these cells is interfered with, imperfect control of the bladder or of the bowels ensues. Similarly if the particular cells concerned in the knee-jerk or other reflexes are interfered with, that reflex may become exaggerated or it may become impaired, the actual condition depending on the situation and nature of the lesion. The third important function of the nerve cells in the cord has reference to the nutrition and tone of the muscles, skin, and other tissues supplied to them. This is the trophic function. If these cells are damaged in any way the nutrition of the muscles, skin, etc., supplied by them is impaired, the muscles waste, and the skin becomes devitalized, with resulting bed sore formation. In addition to looking carefully into the question of motor defect due to disturbance of the motor fibres, or sensory disturbance—touch, heat and cold, pain—due to defect in the sensory fibres, we have to examine carefully into the condition of the organic reflexes, bladder and rectum, and the other reflexes of which the knee-jerk is the most typical example. By carefully investigating the nature and defect in any given case, we are usually able to determine the site of the lesion in the cord and its nature.

We will describe three cases which illustrate well the clinical features present in three of the most common diseases of the spinal cord. One of these is the result of an inflammation of the cord, which involves both the grey and the white matter, and is known as myelitis—a *transverse myelitis*, because the whole of the cord is affected. The second is a case of *disseminated sclerosis*, or multiple sclerosis, which is characterised by little patches of chronic inflammation scattered indiscriminately throughout the cord. The third is a case of *locomotor ataxia*, or tabes dorsalis; here the disease is chiefly located to the posterior part of the cord, the part concerned in the conveying of sensory impulses upwards. The clinical features and general management of these three diseases will now be discussed.

1. TRANSVERSE MYELITIS.

This is an inflammation which involves both the grey and the white matter of the cord. It is induced by injury and also by disease. In traumatic cases there is usually a fracture or fracture-dislocation of the spine, the cord being lacerated right across at the site of the injury. In non-traumatic cases, the disease arises as the result of bacterial infection, or as the result of a hæmorrhage in the cord, or more rarely from pressure by a tumour of a tuberculous, syphilitic, or malignant nature.

Symptomatology.

The symptoms vary in accordance with the causation and the severity of the inflammation. In a very pronounced case, such as that of one of the patients abovementioned, he is quite unable to move the lower limbs, being completely paralysed from the waist downwards. On testing his sensibility we found that the lower limbs were quite insensitive to touch, to heat and cold stimuli, or to painful stimuli,—*e.g.*, from pin-pricks. There was incontinence of the urine and incontinence of fæces, and the other reflexes,—*e.g.*, knee-jerks, were completely abolished. The loss of power, the loss of sensation, the loss of control over the bladder and bowel, and the disappearance of the deep reflexes arise from the fact that the nerve cells and nerve fibres in a particular part of the cord have been destroyed right across.

Prognosis.

The outlook for the patient depends largely upon the nature of the disease, on its duration, and on the degree of recovery which takes place in the first few weeks after the disease develops. The onset is usually sudden; it was in this case due to an acute bacterial infection. The disease developed four weeks ago. As little or no improvement has occurred in that time, the prospects of recovery are unfavourable. It is probable that the nerve cells and nerve fibres have been damaged beyond repair, and little further improvement may be looked for. In less severe cases, the cells and fibres are not so completely destroyed, and a considerable degree of recovery may be obtained, if the patient is carefully nursed and the treatment is carried out for a prolonged period. There are two special risks to which patients affected with myelitis are subject: one is the occurrence of bed-sores, and the other is the development of cystitis with septic complications—death occurring from exhaustion, or from bladder, kidney, or pulmonary complications.

General management.

From the outset, careful nursing is of the greatest importance, special attention being paid to the prevention of bed-sores, and care being taken to avoid burning the insensitive skin surface with hot bottles. Special care is also necessary in regard to the prevention of sepsis in connection with the use of the catheter, which is so frequently necessary in these cases. The general principles of treatment may be stated as follows:—

1. Keep up the nutrition of the skin so as to prevent the formation of bed-sores; exercise special precautions with regard to the use of hot bottles.

2. Guard against septic complications in connection with the incontinence of urine and of fæces, cleanliness and rigid asepsis being essential.

3. Keep up the nutrition of the paralysed part by means of judicious massage and, in appropriate cases, electricity.

4. Regulate the bowels carefully by means of aperients, or occasionally lavage.

5. Special measures may be indicated in special cases. These include the use of vaccines in cases of bacterial infection, where the causal bacteria can be determined; and, in exceptional cases, operation.

2. DISSEMINATED SCLEROSIS.

(*Syn.* MULTIPLE SCLEROSIS.)

Disseminated sclerosis or multiple sclerosis is one of the commoner forms of chronic disease of the nervous system. It affects the spinal cord and also the brain. It is characterised by a patchy inflammation throughout the spinal cord and the brain, of undetermined origin, the inflammation resulting in the development of small areas of connective tissue. This degenerative tissue replaces the nerve cells and nerve fibres at the affected areas. The disease commonly affects people between the ages of twenty and thirty-five, and more especially females. It is often overlooked in its early stages, the condition being erroneously regarded as due to neurasthenia or hysteria.

Symptomatology.

In the early stages of the disease, the chief symptoms met with are eye symptoms, more especially paresis or paralysis of one of the external eye muscles, fine tremors, some degree of general weakness, and general nervousness. Some gastro-intestinal derangement is very frequently present, notably flatulence and constipation. At this stage of the disease diagnosis is difficult, and the true nature of the condition is frequently overlooked, the malady being regarded as of functional or neurasthenic origin, and no trouble being taken to ascertain the cause of the neurasthenia. In a fully developed case the diagnosis is perfectly clear.

The clinical picture is quite characteristic. The little patches of inflammation scattered throughout the spinal cord and the brain produce the following symptoms and physical signs :—disturbance of walking ; gait is very much interfered with, this being due partly to actual paralysis of the nerves and partly to loss of control on the part of the nerves. The feet are raised and put down in a spastic manner, which is characteristic. The second great clinical symptom is the coarse muscular tremor, the result of the inco-ordination in the nervous system induced by the patches of inflammation. In the later stages of the disease the patient may be unable to feed herself on account of the shaking of the hand, the shaking becoming aggravated the more nearly the hand approaches the mouth. A third characteristic symptom is the affection of the eye muscles. The tremor of the eye muscles is shown in the form of constant movement of the eye, so-called nystagmus, also by a paralysis of one or other of the external ocular nerves, inducing in some cases a squint, and in other cases a drooping of the upper lid or ptosis. There may be few, if any disturbances of sensation. There is usually some slight lack of control of the bladder. The brain is often affected, the patches of degeneration in the brain substance revealing themselves clinically by an evident loss of mental power.

Diagnosis.

In the well declared type of disease the diagnosis is very easy as the picture is characteristic. The diagnosis at this stage is, however, of relatively little importance because the damage is done and little is to be looked for from the treatment. An accurate diagnosis is specially important in the early stage of the disease, as at this stage much can be done permanently to arrest the diseased tendency. The cause of the disease is unknown, the balance of evidence in the opinion of experts being in favour of its toxic or infective origin, the source of toxæmia being usually the digestive tract. The frequency with which minor gastric or intestinal symptoms are present was referred to above; special attention should be directed to any such symptoms and their cause ascertained. These symptoms have as a rule preceded and have not merely followed the nervous symptoms. Careful examination of the digestive tract should always be made, including examination of the stools, X-ray examination after a bismuth meal, and a bacteriological examination of the urine. These are essential before correct lines of treatment can be laid down.

General management.

There are two sets of conditions which the doctor and nurse have to manage. One is to control as far as possible the nervous temperament of the patient, and the other is to direct attention to any underlying physical condition giving rise to the toxæmia. Attention must be directed to improving any defect of the stomach, small intestine, or large intestine, which may have been revealed on investigation. Any local pelvic disorder, or any source of toxæmia from the teeth or gums should be similarly attended to.

Massage with judicious application of exercises carefully carried out occupy a prominent place in treatment, care being taken to see that these are not overdone. Great care must be employed with regard to the use of massage and any electrical treatment to the limbs, as more harm than good is sometimes done by these means. Medicinal remedies are of little value. In cases associated with anæmia, a course of iron or arsenic is frequently useful. If the cases are adequately investigated in the early stages of the disease, and treatment directed along the appropriate lines, the disease can be arrested almost before its diagnosis can be determined with certainty. That is the stage at which the doctor and the nurse can do most valuable work for the patient. When the clinical symptoms of the disease are fully established, the ailment is far advanced, and treatment is comparatively of little avail.

3. LOCOMOTOR ATAXIA.

(*Syn.* Tabes dorsalis.)

Locomotor ataxia, or tabes dorsalis, is a disease of the spinal cord which mainly affects the male sex between the ages of twenty and forty. The causation of the disease is unknown, but it is most commonly seen in subjects who have previously been infected with syphilis. According to some investigators the disease is the result of a particular bacterial infection derived from the bladder or the bowel, chiefly occurring in people who have had syphilis.

Symptomatology.

The clinical features of the disease are well illustrated in the case of one of the patients referred to. The history of the case is briefly as follows :—

A. B., aged thirty, enjoyed good health until about nine months ago, when he became slightly unsteady on his legs. He first observed a slight unsteadiness on his feet in the morning when he was drying his face with the towel after washing. About the same time he observed that he did not walk so well in the dark. Shortly afterwards he had a peculiar feeling in the soles of his feet, the ground appearing to be soft and woolly under him. He has suffered from two attacks with his stomach, characterised by vomiting lasting two days, the vomiting having no relation to food. (These attacks are distinctive : they are of nervous origin, and they are known as gastric crises.) Lately he has had slight difficulty with his water, the chief difficulty being inability to retain it normally, and defective control over micturition.

On examination the man is well nourished, has a good colour and presents generally little evidence of disease. His walking power is greatly impaired. He walks with the feet wide apart ; he has a high stepping gait and brings down his heels sharply on the ground. When asked to stand with his toes and heels together and his eyes shut, he sways from side to side, and would fall if not supported. His motor power in the arms and legs is quite good, the defect in walking being due to defective co-ordination and not to actual paralysis. There are areas of defective sensation both to touch and to heat and cold in the lower limbs. The knee-jerks are abolished. The pupils are small and do not react to light. (Argyll-Robertson symptom). This last symptom is one of the most important signs of the disease.

All these symptoms are the result of a chronic degeneration of the posterior part of the cord—the sensory columns of the cord—this inducing the marked incoordination which is the special feature of the disease, and the disturbance of sensation, and other symptoms and signs. When a sample of blood was withdrawn and tested by the Wassermann's test, it gave a positive result, indicating previous specific infection.

Prognosis.

The prognosis as regards cure is unfavourable, the condition tends to steady deterioration ; but in some cases the disease remains arrested for many years. The chief risks are (*a*) complications associated with the bladder, and especially the development of a septic cystitis, and (*b*) the extension of the disease to the remaining parts of the cord and also to the brain. There is a close relationship between tabes dorsalis, which is a disease of the cord, and general paralysis of the insane, which is a disease of the brain cortex. In the later stages of tabes dorsalis alteration in the mental functions are frequently present.

General treatment.

The primary defect being one of co-ordination, the main object in treatment is to seek to promote co-ordination of the various muscles by exercises adapted for the purpose. Thus, for ten to fifteen minutes twice a day, the patient should be encouraged to walk on a marked floor : this exercise being useful in the training and co-ordination of the sense of sight and the muscular sense. Additional exercises of the lower limbs directed to promote better co-ordination of the muscles should also be prescribed. Medicinal remedies have little or no influence on the course of the disease. The use of salvarsan to counteract the previous specific infection is advocated by some authorities. If the careful bacteriological examination of the urine gives any evidence of bacterial infection, attempts should be made to correct and remove that by appropriate vaccine treatment. Throughout the course of the disease, special attention should be paid to maintaining a healthy condition of the intestinal tract.

GENERAL PARALYSIS OF THE INSANE.

General paralysis of the insane, or as it is commonly termed general paralysis, is a progressive and incurable disease of the nervous system, characterised by bodily symptoms which end in PARALYSIS and mental symptoms which end in DEMENTIA. The disease runs a fairly definite course of development, and as a rule terminates fatally in a few years. There is great variation in the nature and duration of the earlier symptoms of the disease in different cases, this being one of its characteristic features. It is specially a disease of the adult male. Its causation is unknown, though syphilis is a very important predisposing cause. Many authorities hold the view that a superadded infected element plays an important rôle in this disease. The course may be somewhat arbitrarily divided into three stages: (1) the prodromal or earlier symptoms; (2) the acute stage; and (3) the stage of dementia.

(1) The prodromal symptoms.

The disease may develop suddenly without warning, but more commonly there are some mental, sensory, or motor symptoms. The mental warnings are: loss of power of attention, restlessness, changes in temper, and loss of control often associated with boastfulness and expansive benevolence or extravagance. The motor symptoms include some hesitation in speech, blurring of articulation, changes in the handwriting, tremor, alteration in gait, with inequality of the pupils which fail to react to light. The sensory warnings include hallucinations and defects of the special senses. The average duration of the symptoms in this period is about a year.

(2) The acute stage.

During this stage all the physical and mental symptoms described above become more developed. This may be ushered in by an attack of melancholia or mania, or by convulsive seizures, followed by confusion or stupor. Impulsive acts which bring the subject under the care of the police are not uncommon. The state of exaltation or megalomania may become more pronounced, the patient imagining himself extremely wealthy, and offering to distribute the millions which he does not possess. The eye symptoms become more developed. The hand-writing is often characteristic; the letters are shaky, incomplete, detached, or illegible. In the early stages the patient often writes voluminously and quickly. Seizures of various kinds are not uncommon at this stage: they vary in severity from simple congestive attacks to seizures of an epileptiform character. All the bodily functions become depressed, the bowel being deranged, and some difficulty being experienced in controlling the bladder and the rectum. A remission of the symptoms is very common during the earlier stages of the disease—this remission may be complete, so that the patient may resume work for a time.

(3) Stage of dementia.

The stage of dementia is the third and final stage, and extends over a period of about a year. There is loss of special and common sensation ; objects, persons, and places are no longer recognised ; the patient cannot take care of himself ; ataxia gives way to paralysis, and the patient becomes bedridden. Brief attacks of excitement may occur. All the bodily functions become seriously lowered, death occurring through intestinal, renal, or vesical derangements, often accompanied with bed-sores, œdema of the lungs, or pneumonia.

Diagnosis.

The diagnosis of this disease is often very difficult in the early stages. It should be kept in view that the disease may start with almost any form of mental or physical disorder. The diseases most likely to be confounded with it are : alcoholism, disseminated sclerosis, tabes dorsalis often associated with mental symptoms, paralysis agitans, and syphilitic affections of the brain other than distinctive general paralysis. Assistance in the diagnosis is given by the history of the case, previous infection by syphilis, result of the Wassermann reaction, the remission in symptoms, and the results of the examination of the cerebro-spinal fluid. Reference has already been made to the great variation in the manner of development of the symptoms. While the clinical features in an average case have been described above, not a few cases run a more acute course, and terminate within six months of the onset. The disease cannot be diagnosed from the presence of one or two symptoms. A careful review of all the mental symptoms and physical signs is required, and much information can be obtained from the patient's relatives or friends as to alterations in his habits or mode of life. Before making a diagnosis great care should be taken to eliminate the factor of alcohol.

It may be useful to illustrate the disease by short reference to the history of two patients at present in hospital.

J. G., car conductor, aged thirty-three, came into the hands of the police on a charge of theft, the theft being a very petty affair without any benefit to himself. The patient's previous character had been uniformly good, and he had been in the service of the company for eighteen years. The circumstances of the charge against the man led the doctor acting for the police to suspect some mental disorder. On inquiring into the history we learned that the patient had been in a medical ward four years ago, suffering from what was termed a "slight attack of creeping paralysis," from which he made a good recovery. He kept well until a month before admission, when he complained of giddiness in his head, and was off duty for three weeks. Both of these physical conditions were clearly a part of his general paralysis.

On examination there was slight inequality of the pupils which failed to respond to light, and with the exception that the patient was, for him, uncommonly quiet, no mental symptoms were observed. Examination of the cerebro-spinal fluid showed a considerable excess of cells, and examination of the blood gave a marked Wassermann reaction.

After a few weeks' rest the patient was put on probation.

He was, however, quite unfit for his work and forgot everything he was told. On re-admission his habits had now become objectionable, he was inclined to be violent, his memory much impaired, he had forgotten that he was a car conductor, and he was certified.

The second patient is equally typical, but presents a slightly different history.

Man, aged forty-four, admitted to the ward a short time ago having been acting strangely for some time; was out one evening for many hours apparently wandering in an aimless manner and unable to find his way back. When examined shortly after admission, the patient presented all the characteristic features of a case of general paralysis. He had delusions of grandeur; he insisted in presenting the nurses daily with diamonds and millions of pounds; dined with royalty constantly; took a pleasure jaunt in an airship of his own construction with one of the nurses. The patient was in a slightly hilarious mood; his speech was affected, stammering in character; his knee-jerks were absent; his pupils did not react to light; the Wassermann reaction was positive; and there was considerable excess of cells in the cerebro-spinal fluid. As the patient did not improve he was sent to an asylum.

The combination of clinical features here, notably the megalomania, delusions of grandeur, defects in speech, alteration of pupils, with the strange conduct and loss of memory which brought him into the hands of the police, point clearly in the direction of general paralysis.

Treatment.

The results of treatment of the disease are unsatisfactory. Periods of remission in the severity of the symptoms are common, and it is therefore difficult to appraise the value of any special measures that may from time to time be tried. There are cases on record where the symptoms have remained in abeyance for many years, the results suggesting cure. In such cases there may be room for doubt as to the original diagnosis, but the undoubted existence of such cases should lead us not to be too pessimistic, and to devote all our energies to getting the best results. From the nature of the symptoms, treatment is as a rule only satisfactorily carried out in an institution. Keeping in view the theory, held by some authorities, that the disease is the result of a slow infection by pathogenic bacteria, located either in the urethra, intestinal tract, uterine tract, or naso-pharynx, special attention should be directed to the correction of any defect which on careful investigation may be found in these regions. This investigation may involve a careful bacteriological examination of the urine, stools, and nasal mucous membrane. Treatment has to be conducted on general lines. Fresh air, freedom from mental worry and excitement, good food, careful regulation of the bowel and simple tonic measures constitute the general lines.

TUMOUR OF THE BRAIN.

The following case is a good example of tumour of the brain :—

A young man, aged twenty-eight, was quite well until a few months ago, when he began to complain of severe headaches, becoming irritable and depressed, and his mental condition generally different from formerly. This mental dulness increased, and was later followed by unsteadiness in gait, with a tendency to fall, sometimes to one side and sometimes to the other. He vomited occasionally, the vomiting having no apparent relation to food. Optic neuritis was present. There was no paralysis and no disturbance of sensation. The patient became comatose and died a few days later, no localising symptoms having developed. At the post-mortem examination a large tumour was found involving the lateral ventricles of the brain.

This case is a fairly typical example of "Tumour of the Brain," and may be taken as a basis of lecture on that subject.

The Symptoms of Brain Tumour.

These may be considered under the headings of "General Symptoms" and "Localising Symptoms." The former are the more important, because they are invariably present. Localising symptoms may be absent as in the above case.

The three cardinal *general symptoms* are :—Headache, vomiting, and optic neuritis. The headache is very severe, may last for some hours, and is relieved with difficulty by sedatives. The vomiting comes on suddenly without apparent cause ; it has no relation to food. The optic neuritis is only determined on ophthalmoscopic examination.

The vision may not be interfered with till the later stages of disease. Other general symptoms which may be present include: mental disturbance as in the above case, giddiness, and convulsions. The pulse, temperature, and the respiration are usually unaffected, in some cases the pulse may be slow.

The *localising symptoms* include paralysis of various kinds, the nature of the paralysis depending upon the situation of the tumour. Hemiplegia is sometimes present, this being met with in cases where the tumour presses on the internal capsule. Disturbances of sensation may similarly be present if the sensory tract in the brain is affected. A paralysis of one or other of the cranial nerves is not uncommonly present in cases where the tumour involves the origin of the nerve or the fibres in its course at the base of the brain. The reflexes are disturbed, the knee jerk, abdominal reflex, and others being altered; also the organic reflexes. The last-named are more especially involved in the later stages of the disease.

Lumbar Puncture will usually reveal an increase of pressure in the cerebro-spinal fluid.

The Nature of the Tumour.

The tumours usually belong to one or other of the following classes:—

(*a*) Tuberculosis.
(*b*) Specific Tumour.
(*c*) Glioma—a connective tissue tumour.

The rarer tumours include various cysts and secondary cancerous or sarcomatous growths. An injury to the head is frequently an exciting cause of the development of tumour.

Diagnosis.

Three questions have to be considered—

(*a*) Is a tumour present ?
(*b*) What is its nature ?
(*c*) What is the site ?

It is usually possible to determine the first ; it is often impossible to do more than hazard an opinion on the second and third questions. A number of conditions may simulate cerebral tumour. Of these the more important are—chronic Bright's disease, meningitis, general paralysis of the insane, abscess of the brain, epilepsy, and in rare cases hysteria. If the symptoms and physical signs are carefully observed, and the possibility of these other diseases kept in view, little difficulty is usually experienced in the diagnosis.

The Treatment.

This may be considered from the curative or palliative point of view. Tumours of a specific nature are curable by the administration of potassium iodide and mercury. Tumours which can be accurately localised to the surface of the brain can occasionally be removed successfully by operation. In all other cases the prognosis is decidedly unfavourable. Relief of symptoms can be afforded by sedative remedies, such as phenacetin, antipyrin, potassium iodide, and cold applications to the head. More relief, though of a temporary character, can often be given by lumbar puncture. The temporary reduction of pressure in the cerebro-spinal fluid thus effected often gives marked relief of a temporary kind.

MENTAL DERANGEMENT.

There are few more interesting chapters in clinical medicine than the study of disordered mental conditions. I have frequently drawn your attention to some of these cases which have come under my care in the special ward set aside for their management. It will be useful to summarise some of the essential features of the more common cases. A few words are necessary by way of introduction.

Certain examples of derangement of the mind induced by acute toxæmic conditions have frequently come under our observation. The delirium occasionally present in fever is the result of the bacterial toxæmia produced by the fever. Here the mental disturbance is seldom profound ; it is a subsidiary part of the general picture ; the mental condition clearing completely with a diminution in the toxæmia. The delirium of acute alcoholism—delirium tremens—is another good example of acute mental disturbance arising from a toxæmia of chemical origin. The clinical picture here comprises hallucinations, delusions, suspicion, and mental confusion. All of these pass off as a rule quickly when the cause is removed.

The class of case which we are considering includes two groups : (1) patients admitted to the ward in a state of excitement, classified as cases of mania ; and (2) patients whose main symptom is that of mental depression, classified as cases of melancholia.

The terms " Mania " and " Melancholia " are really symptoms rather than diseases. There are several types of mania as there are several types of melancholia. In the modern classification of mental disorders, these terms have to be supplemented by other terms which give a clue to the particular type of mental disorder. I propose, for instance, to illustrate to you the clinical features of puerperal mania, a mental disorder induced by an acute bacterial infection, and also the clinical features of a case of climacteric melancholia, where the mental symptoms arise as a result of a toxæmic condition occurring at the climacteric period. At this period there is a lowering of the nervous tone of the individual, rendering her more susceptible to the action of toxins or other unfavourable influences. There are two great determining causes of mental derangement: (1) a hereditary irritability of brain tissues, rendering the nerves less able to resist various strains—either physical or mental; and (2) a toxæmic cause, the origin of which is to be found in some latent septic focus in the oro-gastric, intestinal, or genito-urinary tract.

1. MANIA.

Mrs A. B., young married woman, was recently admitted to the ward suffering from mania, which developed a few weeks after childbirth. Shortly after the child was born, she did one or two peculiar things, of which little notice was taken; but suddenly she passed into a condition of general maniacal excitement, shouting and yelling, offering violence to everybody around her, several people being required to restrain her.

This is a very typical history of puerperal mania—mania occurring in the puerperium—and universally recognised to be of bacterial origin. The careful investigation of these cases usually reveals the source of sepsis to be in the uterus, sometimes in the bladder or bowel. An examination of the blood shows definite leucocytosis, this being Nature's attempt to overcome the bacterial infection.

The DIAGNOSIS in such cases is very clear. The PROGNOSIS is more difficult. The great majority of patients recover in a few weeks or in a few months' time. Exceptionally, two or three years may elapse before the mental condition is fully restored. The prognosis depends partly on the severity of the infection, and largely on the predisposition of the patient. If there is a history of marked nervous instability in the family, other members of the family having suffered from mental disorders, the outlook is proportionally more guarded.

Treatment.

When a case of this kind comes under observation, the first point to determine is whether the mental condition is of sufficient severity to necessitate her removal to an institution. In a few cases, in which the mental symptoms on admission are very acute, the condition clears up within a few weeks, the patient being enabled to convalesce under favourable conditions before returning home. More commonly, however, the disease is of longer duration, necessitating appropriate institutional treatment. Treatment must be carried out along the following lines :—

1. Keeping in view the definite toxic origin of the disease, appropriate treatment must be directed to correcting any septic condition in the uterus, bladder, bowel, or teeth.

2. The state of the bowels and state of the urine requires investigation, including bacteriological examination, which may throw light on the nature of the bacterial toxæmia and give an indication with regard to vaccine treatment.

3. Treatment on general lines, directed to the relief of symptoms. For example the administration of light diet, or it may be milk only, for a time (feeding with a nasal tube may be necessary); the administration of sedatives to correct the excitement, and notably large doses of bromide, chloral, or hypodermic injections of hyoscine.

2. MELANCHOLIA.

Many patients are admitted to the ward whose chief mental symptom is one of depression or melancholia. It cannot be too clearly understood that the terms "Mania" and "Melancholia" are merely symptoms—mania representing a condition of exaltation, and melancholia a depression of the higher mental functions. This condition of depression or melancholia may arise from different causes. The succeeding case illustrates the type of melancholia which occurs at or about the menopause, known as climacteric melancholia. The clinical history of this patient is fairly characteristic:—

Mrs A. D., aged forty-six, has been somewhat depressed for several months past. Previously she had been a little moody and complained of headaches. On the day before admission she looked "queer" to her daughter and spoke of destroying herself. Her antecedent medical history had been quite satisfactory, with the exception that she suffered from one very severe attack of neurasthenia of many months' duration.

On examination the patient looks depressed and miserable. She is very silent, is with difficulty roused to reply to any question, and sleeps badly. Her colour is bad—she looks anæmic and sallow. Her pulse is rather quick, and weak in character. The abdomen is very flaccid and lacking in tone. The bowels are markedly constipated, and on clearing out the bowel, a condition of marked putrefaction was found.

This constitutes a fairly typical case of what is known as climacteric melancholia, the case being one in which the bowel disorder was perhaps more pronounced than it is in many such cases.

The chief factors determining the existence of this mental condition are (1) the changes in the glands and the system generally incidental to the change of life, this being a period in which the nervous and other systems are in a condition of instability ; (2) the operation of toxæmic influences, more especially arising from the bowel, uterus, or urinary tracts ; (3) mental strain such as is involved in domestic worry, worry incidental to the war, or the like.

Prognosis.

The prognosis in cases of melancholia occurring at the climacteric is good, the great majority of cases recovering in from three to six months ; in some the duration is much longer.

General management.

Here the first question that arises is as to the possibility of a recovery being effected in a general hospital without the patient being sent into a mental instituion.

In favourable cases the attack passes off quickly with a few weeks' hospital treatment. The principles of treatment are as follows :—

1. Abundance of fresh air, cheerful surroundings, plenty of exercise proportionate to the general strength of the patient.

2. The administration of appropriate hypnotics to induce sleep ; the fewer drugs used for this purpose the better ; fresh air and exercise are Nature's remedies.

3. The judicious use of calomel and salts to serve the double purpose of clearing the bowel well out and getting it into a cleaner condition with less putrefaction.

4. Any contributory source of sepsis present in connection with the teeth, gums, uterus, or bladder should be appropriately dealt with.

5. The diet should be light and nutritious, the amount of fluid with meals being restricted.

6. Tonic remedies may be prescribed ; among the most useful being arsenic and strychnine. In some cases very special benefit attaches to the use of small doses of thyroid gland.

7. The mental environment of the patient is important ; cheerfulness and tact on the part of the nurse and doctor are valuable factors in treatment.

CHAPTER VII.

FEVERS.

MEASLES.

MEASLES is an acute specific infective fever with characteristic macular eruption, and widespread catarrh, affecting chiefly the respiratory, nasal, and ocular mucous membranes. The incubation period is ten to fourteen days: it may be so few as seven or so many as eighteen. The infecting agent is unknown. The infection is through the air passages. It is greatest during the stage of invasion. The disease is practically endemic in large industrial centres, and from time to time becomes epidemic also.

Stages.

1. *The stage of invasion,* which lasts from three to five days, is characterised by catarrhal symptoms, sneezing, running at the eyes and nose, and general malaise. The attack may begin somewhat suddenly. There may be nausea, vomiting, and headache. The temperature is raised to perhaps 102° F. or more, the skin feels hot, and after a restless night the child is likely to be worse in the morning. The aspect of the patient at this stage is often characteristic; the eyes are watery and injected, the face is pale, and a few reddish blotches or spots may often be observed round the mouth and nose, which gives to the skin a measly

appearance; and the child, who persistently avoids the light in consequence of the photophobia which is present, both looks and feels profoundly miserable. The tongue is furred; there is reddish hyperæmia of the throat, and there may be a distinct punctiform rash spreading over the whole mucous membrane of the mouth except the tongue. The buccal spots of Koplik appear as blueish-white specks, surrounded by a red margin at the line of the junction of the molar teeth when the jaws are closed; Koplik spots often appear before the rash. The temperature often becomes normal at the end of this stage.

2. *Advance and eruption.*—The eruption usually commences on the fourth day and lasts two to seven days. At the outset it consists of small discrete red spots, which may be usually first observed about the roots of the hair, on the forehead, and sides of the head and neck especially behind the ears. It quickly invades the face, neck, and upper part of the chest and arms, from whence it spreads downwards over the trunk and limbs, involving the legs in from twelve to twenty-four hours after its first appearance. As the eruption develops, the individual spots become more raised and larger, and coalesce with neighbouring ones, giving rise to irregular raised tracts of vividly injected skin. The rash, which is of a dusky-red colour, in most cases reaches its full development in from twenty-four to thirty-six hours, after which it rapidly subsides. As a rule the eruption is well marked on the face, and the circumoral region rarely escapes invasion—in this respect contrasting with scarlet fever. The eruption fades in the order in which it came, and when the rash

has faded, more or less peeling of the skin usually follows. The respiration is rapid ; the trachea and bronchi show a varying degree of catarrh ; the lymphatic glands in the neck are usually somewhat enlarged and tender ; the pulse is accelerated. In severe cases there may be delirium and sometimes convulsions.

3. *Resolution.*—The temperature usually falls by slow crisis as the rash fades, resolution being complete in from two to eight days. Subsequently there is a slight branny desquamation all over the body. A faint brownish, mottled staining may be seen for some days after the temperature is normal.

The severer forms of measles comprise two varieties : the *pulmonary* and the *toxic* or *malignant*. The former is characterised by specially severe catarrh of the respiratory organs, in which cyanosis may gradually supervene, and delirium give place to a drowsiness which soon merges into a fatal coma. In the malignant or hæmorrhagic type, the rash is badly developed, and becomes petechial ; hæmorrhages occur from the mucous membranes ; there is great constitutional depression—death usually occurring from the severe toxæmia.

Complications and sequelæ.

The complications are mainly an aggravation and an extension of the catarrhal symptoms, which are normal accompaniments of the attack. They are chiefly respiratory, and include bronchitis, bronchopneumonia, laryngitis, and pulmonary collapse. Other complications are severe stomatitis, diarrhœa due to enteritis, and inflammation of the glands or the middle ear. There is a special risk of the subsequent development of tuberculosis.

Diagnosis.

This can, as a rule, readily be made from the history of exposure, from the initial catarrhal symptoms, from the nature of the eruption, and the presence of Koplik spots. It is to be distinguished from scarlet fever, drug or septic rash, rötheln or German measles, and smallpox.

Management.

The patient should be isolated for three weeks from the onset; quarantine being carried out for fourteen days from the exposure. The treatment is mainly expectant, and has as its object the placing of the patient in the best position for throwing off the attack, and for warding off the various inflammatory complications which are prone to supervene and endanger life. The patient should be in a room sparsely furnished, freely ventilated, and well warmed; the light should be subdued. The patient should be encouraged to blow his nose at intervals in order to clear out the nasal passages, and benefit may sometimes be obtained by gentle irrigation of the nasal passages with Condy's fluid or boracic lotion. This helps to prevent the development of acute middle ear catarrh. The diet should be confined to milk, which may be peptonised, or diluted in equal portions with barley or lime water. As soon as the acuteness of the catarrh is over, the patient may be placed on convalescent diet (see p. 245). A few grains of Dover's powder may be given three times a day if necessary. In severe cases, complicated by bronchitis or broncho-pneumonia, the local application of hot linseed meal poultices to the chest is advantageous. Pyrexia and restlessness are best removed by tepid or cold sponging. Complications in measles are very often fatal. Special care should be taken during the convalescence on account of the risk of the development of glandular tuberculosis.

German Measles.—Rötheln, rubella, or German measles, is an acute specific fever most prevalent in spring or early summer. It resembles both measles and scarlet fever. Adults are specially liable to be attacked. This disease is characterised by the mildness of the catarrh, the absence of Koplik spots, while the rash is usually smaller, pinker, and more discrete than that of measles. The rash in rötheln is not infrequently absent from the face altogether. Rötheln is a mild affection usually unattended by any complications, and yields readily to simple expectant treatment. The patient should be isolated for about ten days; quarantine period from eighteen to twenty-one days.

SCARLET FEVER.

An infectious disease characterised by a hyperæmic skin eruption of a punctiform character diffused more or less over the entire surface of the body, which appears on the second day. It is preceded by an inflammation of the fauces, and is followed by a general desquamation of the skin. It is attended by fever and nervous symptoms, and the joints, the serous membranes, and glands are frequently involved. The disease is due to a specific organism. It affects children most largely, the liability reaching a maximum about the sixth year.

Means of Spread.

The disease spreads by direct infection, and also indirectly through the medium of the attendants or visitors on the sick, or by means of the fomites contained in the room, clothes, books, etc. In addition to personal contact, infection can be effected through the medium of pet animals, and the disease is also disseminated through milk which has become contaminated by those who are either infected with scarlet fever or who are attending scarlet fever patients.

Symptoms.

Scarlet fever, like many other affections, is one of the most irregular of diseases. In some cases the symptoms are so slight as to make a correct diagnosis impossible without waiting for the course of events.

It is by no means uncommon to find cases where a diagnosis is only made upon peeling of the hands or feet, or by a development of an acute nephritis, occurring after a slight inflammation of the throat, which had been scarcely noticed.

There are usually symptoms of invasion, such as feeling tired, headache, loss of appetite, and aching limbs. After a few hours a sore throat develops, with difficulty in swallowing. In more severe cases, pronounced headache and vomiting may be features; convulsions may usher in the disease in very young children. In the milder type of disease the fever is slight, rarely reaching 100° F., and subsiding within three or four days. In severe cases or in presence of complications, the fever is higher and lasts longer. A very pronounced eruption is usually associated with a high temperature. The pulse is always markedly accelerated, the increase being often out of proportion to the increase in temperature. In the malignant type of scarlet fever the pulse is very rapid and feeble, ranging from 150 to 160 or more. The tongue in a well-marked case is covered in the early stages with an extensive white coating of epithelium through which the normal papillæ protrude. This coat usually disappears by the fourth day, leaving a raw-looking red and fleshy condition commonly termed a "strawberry tongue," which is characteristic of the disease. In malignant cases death may supervene before this condition of the tongue has developed. In the early stages of the disease the throat presents a uniform redness of the uvula, soft palate, and tonsils. Later, the colour becomes a deeper red, and involves the whole of the fauces and sometimes the hard palate. The tonsils are much enlarged, and become greatly covered with minute white dots produced by excessive secretion in the follicles. The lymphatic glands of the throat and neck are usually enlarged. In very severe cases abscesses may develop. The throat inflammation subsides within a few days in all cases except those of an unusually severe nature.

The Eruption.

In the mildest type of scarlet fever the rash is scarcely visible, forming as it does a mere diffused scarlet blush which is evanescent in character, may last only a few hours, and may have totally disappeared before the visit of the doctor. The eruption is most commonly first seen on the neck, the shoulders, upper part of breast, and upper arm ; it is also visible on the forehead and cheeks. The eruption appears usually about twenty-four hours after invasion, spreads rapidly from above downwards, attains its maximum in three days, when desquamation begins in the same order of process. Desquamation varies in duration with the preceding eruption, is usually complete within six or eight weeks, but may be delayed longer on the palms and soles.

Other Systems.

Other systems show various affections. The urine is scanty, and in severe cases there is inflammation ot the kidneys, the nephritis being induced by irritation due to elimination of bacterial poison through the kidneys. In other cases the nervous system may be frequently affected by a special toxæmia, with delirium, restlessness, sleeplessness, hyper-pyrexia, and convulsions ; vomiting, constipation, and diarrhœa may be present. A catarrh of the Eustachian tube, middle ear, and nose may develop from direct extension of the inflammation, and in some cases is associated with a copious muco-purulent nasal discharge. Occasionally a muco-purulent catarrh of the vagina is present which may be a source of infection.

Varieties of the Disease.

1. Scarlatina sine eruptione.—This is an abortive attack characterised by its mildness, and the absence

of certain symptoms. There is usually present a well-marked desquamation.

2. Scarlatina simplex.—A case attended by slight sore throat, characteristic eruption, temperature up to 101° F. or 102° F., pulse 120 to 130 per minute. The fever is at its height in three or four days, and the entire symptoms subside within a week, without complication.

3. Scarlatina anginosa.—This is more commonly seen in children, and is characterised by great severity of the faucial inflammation with great involvement of glands and general septicæmia. The temperature remains high and pulse very rapid and irregular; insomnia and delirium are common. If no improvement occurs in the symptoms in the second week, the prognosis is very guarded.

4. Scarlatina maligna.—Cases characterised by a great severity of the toxæmia, death occurring within twenty-four or forty-eight hours, even before the development of well-marked physical signs.

5. Surgical scarlet fever and puerperal scarlet fever.—A scarlatina eruption occurring after operation (surgical scarlet fever) is doubtless a manifestation of sepsis from an organism similar in its nature to that of scarlet fever. This is usually of a mild type. A similar condition is seen in the puerperium (puerperal scarlet fever), where a similar infection is much more serious and is often fatal.

The Complications of the Disease.

These are numerous and important. They may develop suddenly or their advent may be insidious. In the order of their frequency and importance, these may be stated as follows :—

(*a.*) Albuminuria and acute nephritis. The urine should be carefully observed throughout all stages of the disease.

(*b.*) Rheumatism, involving the joints with inflammation of the pericardium and endocardium. As in the case of the kidneys, the heart should be very carefully watched throughout the course of the disease.

(*c.*) Ear disease, more especially middle ear catarrh, with liability to mastoid infection and implication of the meninges and lateral sinus.

(*d.*) Ulcerative stomatitis.

(*e.*) Bronchial catarrh and broncho pneumonia. These are special dangers, more especially in cases associated with albuminuria.

(*f.*) A later complication is chronic disease of the lymphatic glands and other tissues of a tuberculous nature.

The diseases with which scarlet fever is mostly confounded are an acute tonsillitis, erythema, diphtheria, syphilis, influenza, and what is sometimes termed the "fourth disease." An acute erythema induced by the use of a soap and water enema may closely simulate the eruption of scarlatina. The diagnosis is as a rule easy if the various possibilities are kept in view.

The Treatment.

The management of cases of scarlet fever may be considered from the points of view of firstly, prophylaxis and isolation; and secondly, the more strictly medical treatment.

PROPHYLAXIS AND ISOLATION IN SCARLET FEVER.

An accurate diagnosis is sometimes impracticable until the third or fourth day. Doubtful cases should therefore be quarantined, until a definite decision on the nature of the attack is possible. Immediate transfer to a scarlet fever ward on mere suspicion is to be avoided, and on the other hand the retention of a doubtful case in the home without special precautions is unwise. Patients should be isolated, this isolation extending to the nurse and attendant. In a private house the most suitable place is the highest storey; a large airy room should be selected, the windows should, if possible, be open night and day, but without placing the patient in a draught. A three-feet-wide bedstead on a wire mattress is the most convenient for nursing. All unnecessary furniture and hangings should be removed from the room.

GENERAL MANAGEMENT.

The surface of the body should be washed with soap and water every morning, with tepid sponging at night. At the end of a week, if all fever is gone, a daily bath may be taken, with due precautions against chill. Cold sponging and the wet pack is of value in cases with cerebral symptoms. It reduces the fever, diminishes the pulse rate, quietens the cerebral symptoms and induces sleep. Drinking of cold water should be encouraged in order to allay thirst and promote thorough elimination through the kidneys. A little lemon juice in soda water with a little sugar is an alternative refreshing draught. During the febrile stage, milk should be the staple food, the diet being added to after the preliminary symptoms have subsided, and in absence of any kidney complications. In an average case the following is a good dietary rule :—

1. For the first four days the nourishment should consist exclusively of milk—not exceeding two or three pints with as much water as is desired—with the exception perhaps of some lemonade and soda water.

2. For the next four days an egg and farinaceous foods may be added.

3. During the ensuing four days the diet may include some weak broth, fish, fruit, and vegetables.

4. After this period poultry, game, and meat may be gradually allowed, and the food administered as freely as desired. The urine should be carefully tested for albumin, and the diet adapted accordingly.

Stimulants are seldom necessary, and their administration must be regulated according to the age of the patient, and the nature of the attack. A careful observation of the urine should be made throughout the course of the disease, and for a week or two after the patient is allowed up. The patient should be kept in bed for the first three weeks.

Medicinal Treatment

In a simple uncomplicated case there is little needed in the way of medicinal treatment with the exception of a preliminary laxative to clear the bowels out, repeated judiciously as required, and the administration of a simple febrile mixture to promote elimination from the skin and kidneys. The value of water drinking, as a means of elimination by the kidneys, has been already referred to. During convalescence a general tonic, especially iron, is indicated.

Disinfection.

Careful attention should be paid to disinfection *during* the illness and *after* the illness. All the excreta, expectoration, and urine should be received into vessels which are kept scrupulously clean and frequently disinfected. Any nasal secretion should be removed by clean rags and should be immediately destroyed. The body clothes and bed clothes and nurse's clothes should be changed as often as is required for cleanliness, and thoroughly disinfected. All linen and washable material should be placed in an antiseptic solution before being sent to the special laundry. After the illness, disinfecting baths are advisable for several days before the patient is allowed full liberty, fresh clothes being worn when this liberty is granted.

Opinions vary as to the necessity and value of anointing the peeling skin with an antiseptic oil during later stages of convalescence. This may be a useful measure provided everything else necessary is being attended to. Great care should be taken in the later stages of the convalescence; change of air where possible is advisable, and an iron tonic is useful to counteract anæmia. A thorough convalescence diminishes the risks of subsequent development of tuberculosis.

DIPHTHERIA.

Diphtheria is a specific infectious disease characterised by a local fibrinous exudation on the tonsils and fauces, and by constitutional symptoms due to toxins produced at the site of the lesion. It is due to a specific micro-organism—the Klebs-Loeffler bacillus. The infection by this organism is usually conveyed direct from person to person, but it is also carried by milk, fomites, by domestic pets, and by clothing.

Incubation.

This extends from two to eight days. The bacillus may be found in the throats of healthy subjects for long periods.

The stages of the disease.

1. *Invasion.*—This may be insidious, characterised by loss of appetite, vomiting (in children), and general malaise, the temperature being variable. In other cases the onset is more severe, the patient being rapidly felled by the severity of the toxin.

2. *Advance.*—This is characterised by the presence of a false membrane on the tonsils and fauces. This is usually adherent, and leaves bleeding points when forcibly detached. The membrane may be thin and translucent or it may be fairly dense. The cervical glands are usually enlarged. As a rule there is not much redness, pain, or œdema in cases of pure diphtheria, but these may be present where there is a mixed infection. The pulse is rapid, soft, and often irregular. The tem-

perature is variable, seldom high, and may become subnormal after forty-eight hours.

3. *Stage of convalescence.*—Convalescence is slow, and there is great liability to complications, more especially paralysis of various kinds, especially of the heart and the diaphragm. There is a distinct risk of heart failure throughout the course of the disease.

Varieties.

The most common situation is the tonsils and fauces; the mucous membrane of the larynx, nose, and vulva may also be affected, inducing laryngeal diphtheria, nasal diphtheria, and vulvar diphtheria respectively. The type of disease varies from a mild, with little or no membrane visible, to a severe type, where the tonsils and palate are covered with a thick membrane, the cervical glands enlarged, sometimes associated with hæmorrhages in the skin, subcutaneous tissue, and nose. The hæmorrhagic variety is nearly always fatal.

Diagnosis.

Diphtheria must be distinguished from tonsillitis, scarlet fever, syphilis, and, in children, from a simple laryngitis with laryngismus. A bacteriological examination is essential.

Complications.

The chief complication throughout is the risk of heart failure. There is further the risk of suffocation in cases of laryngeal diphtheria. Broncho-pneumonia, middle ear catarrh, and acute nephritis are not infrequent complications, and in the later stages various paralyses may supervene during the eight or ten weeks after invasion. These may take the form of paralysis of the eye muscles, shown by various forms of squint, or by inability to read; paralysis of the palate, shown by a nasal voice and regurgitation of fluids through the nose; paralysis of the diaphragm and of the vagus nerve—the two last being rarer and more serious forms of paralyses.

The *prognosis* is always guarded. No cases should be treated lightly: the risks of heart failure and other complications should always be kept in view, and special care taken during convalescence. Patients should be isolated until the special bacilli can no longer be found on culture. Swabs should be examined from the nose as well as from the fauces.

The management of diphtheria cases.

After the diagnosis has been established by bacteriological examination—and in some cases even before this—anti-toxin should be given at once; the minimum dose should be 2000 units given subcutaneously, preferably under the skin of the abdomen, under antiseptic precautions. Local treatment of the throat is of comparatively little value, and should not be carried out unless it can be done easily and without any struggling on the part of the patient. Rest in a recumbent position should be insisted on for at least three weeks, great care being subsequently taken in regard to the liberty allowed to the patient, the effect of sitting up and of gentle exercise on the pulse being very carefully observed. The bowels should be regulated by means of an enema, aperients being withheld until the throat is clean. The judicious use of stimulants is advisable from the outset, in the form of small doses of strychnine and small doses of whisky or brandy, given three or four times daily—the dose being regulated by the age of the patient and the severity of the toxæmia. The diet should be as liberal as is possible, consistent with the throat condition. It should be fluid only until the throat is clean. In the early stages of the disease reliance should be placed on milk, beef-tea, egg-flip, and bovril. When the throat is clean, oat-flour porridge and various milk puddings may be added. When the patch is fully cleared off, light diet may be substituted, and in the absence of kidney or other complications, the patient may be gradually placed on the full diet.

Laryngeal diphtheria.

This may be a primary affection, or the larynx may be involved secondarily to the fauces. It is characterised by croupy respiration, restlessness, cyanosis of the lips, pronounced action of the extraordinary muscles of respiration. Death supervenes from asphyxia. The condition is always a very serious one. Tracheotomy should be performed when the respiratory embarrassment and restlessness become pronounced.

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CEREBRAL-SPINAL MENINGITIS.

(*Syn.* Spotted Fever.)

This is an acute infective disease which occurs (*a*) in an epidemic form, and (*b*) in a sporadic form in many communities. It is associated with a specific germ—a diplococcus. Children and young adults are most frequently affected; the disease is slightly contagious. The disease sets in as a rule with great abruptness, the patient complaining of sudden headache or severe sickness when at work or play. In children convulsions are common. In very severe cases the patient dies in a comatose condition a few hours from the onset of the symptoms.

Symptoms.

Headache is an early and a prominent feature, usually very severe, and chiefly frontal in character; backache is also common. Some rigidity of the neck and back is usually present, and this may be associated with active spasm of some of the neck and back muscles. Convulsions are common at the outset, and minor contractions of the muscles of the arms and legs are not infrequently present. General cutaneous hyperæsthesia is a characteristic feature. The temperature shows no constant change; it is usually febrile, but may be sub-normal, and in some cases the pyrexia is of a remittent type. The pulse is usually increased in rate, but variations in rate and character are common. Skin lesions are frequently observed, and include herpes of the lips and nostrils, an acute erythema resembling erysipelas, more especially over the joints, and a petechial rash met with on the extensor surfaces, more especially over the abdomen and joints. The presence of these spots gave rise to the term spotted fever. Nasal catarrh is met with frequently, the breathing may be slow, but if pneumonia is present the respirations are increased. Nausea, vomiting, and constipation are common symptoms in the early stages. An arthritis or inflammation of the joints is occasionally met with.

A study of the history of the following fatal case well illustrates the disease :—

The man, a ship's carpenter, aged thirty-four, of very pronounced alcoholic habits, was taken ill when at work, two days before admission to hospital. He complained of headaches, and felt sick and vomited twice. In a few hours he became delirious, and later violent. He was seen by his doctor, and sent up to the infirmary as a case of delirium tremens.

On admission forty-eight hours after the onset of the illness, the patient was exceedingly ill. The pulse was 112, respiration 32, temperature 98°, which gradually rose to 102° F. There was marked tremor of the hands and tongue, the patient being slightly delirious, and somewhat violent. There was marked head retraction with very pronounced general hyperæsthesia of the skin. On attempting to extend the leg and thigh there was contraction of the flexor muscles, which prevented the full extension of the leg (Kernig's sign), and an acute erythema resembling erysipelas developed on the extensor aspects of several joints. Bronchitis supervened, and the patient died within forty-eight hours of admission, the pulse rate then being 128, and respiration 56.

Diagnosis.

The differential diagnosis must be made from the following :—delirium tremens—as in the present case, typhoid fever, tuberculous meningitis, pneumonia of the cerebral type, influenza, typhus fever, and smallpox. The combination of symptoms and physical signs met with in the above case were distinctive, but complete confirmation can only be obtained by lumbar puncture, and determining the presence of the specific organism in the cerebro-spinal fluid.

Prognosis.

Mortality is high, ranging from thirty to seventy per cent. of cases. Of late the proportion of recoveries has been greatly increased by the use of special vaccine and serum preparations.

Management of Cases.

1. Careful nursing is essential, as the patients are difficult to feed, and there is marked tendency to bed-sore formation.

2. Special attention should be directed to keeping the mouth and nostrils clean.

3. Diet should be light, consisting of milk, albumin, water, and meat broths.

4. Stimulants in the form of whisky or brandy, with special heart tonics may be indicated.

5. Repeated immersion in a warm bath two or three times a day has a useful sedative effect.

6. Drugs.—Opium in some form as a sedative is the most serviceable drug.

7. Two measures are of special value, more especially if applied in the early stages of the disease—

(*a*) Repeated application of lumbar puncture, drawing off some of the cerebro-spinal fluid; and,

(*b*) The use of a special vaccine, or serum preparation. Within the last year or two the results obtained by this means have been very encouraging.

In view of the degree to which the disease is contagious, and keeping in view the fact that some people, not themselves affected, may act as carriers of the disease, it is advisable to make a bacteriological examination of the nose and throat of those who have been in contact with the patient at the outset of the illness.

TYPHOID FEVER.

Typhoid fever is an acute continued fever caused by the entry of a specific micro-organism—the *bacillus typhosus*—or of poisons arising from it, into the blood; characterised, anatomically, by enlargement and usually ulceration of the lymphoid tissue of the intestines (Peyer's patches), enlargement of the spleen, and swelling of the mesenteric glands; clinically manifested by some or all of the following symptoms: pyrexia, evidences of general toxæmia, enlargement of the spleen, roseolous eruption, and symptoms due to local lesions situated for the most part in the ileum and mesenteric glands.

The infection is conveyed most commonly through drinking water which has become infected with the excreta of a previous case. This may secondarily affect milk, shell-fish (especially oysters), and other foods. Infection may be carried from typhoid excreta by flies. Direct infection from patient to attendant may occur, but is rare.

The incubation period is the interval between the time of infection and of invasion; most commonly it is from eight to ten days, but it may be only two or three days or as long as three weeks. The typhoid organism presents itself in a variety of forms—the variations depending largely on the cultural characteristics of the germ. The three most common are known as typhoid bacillus and para-typhoid A and B.

Stages.

1. *Symptoms of invasion* (1st week).—The invasion is usually gradual. The most constant symptom is pyrexia. The temperature rises first in the evening, and on each succeeding day increases, the evening temperature being higher than the morning, the chart presenting a characteristic step-like ascent (see p. 105). Chilliness, headache, general lassitude, dyspepsia, abdominal pain, diarrhœa, and constipation, cough and bronchitic symptoms, pneumonia, and occasional epistaxis are characteristic symptoms during the stage of invasion. The tongue is coated and white; the pulse is slightly quickened from the start, although not as a rule in proportion to the degree of fever: occasionally the pulse is slow throughout.

2. *Advance.*—During this period there is continued pyrexia with the morning remission already referred to. The languid, apathetic condition of the patient with

hectic flush may be very characteristic. The abdomen is tumid and tender. An eruption is present in a large proportion of cases; it rarely appears before the eighth day of the disease; it consists of spots of a delicate pink colour, slightly raised, with a margin shading into the surrounding skin and fading on pressure. Each spot develops in a few hours, lasts four or five days, and fades gradually. They are chiefly seen on the back or front of chest or abdomen. In severe cases they may be hæmorrhagic. The bowels may be constipated, or diarrhœa may be present with typical "pea-soup" stools. The tongue tends to get more coated and markedly dry in the centre. In mild cases the temperature may decline, and become normal by the fourteenth day. In very severe cases death may occur with pronounced nervous symptoms, or from serious hæmorrhage or perforation. The stage of advance may last for one to five or six days.

3. *Resolution and convalescence.*—The temperature falls by lysis; intestinal symptoms disappear; the tongue clears; the appetite returns, and convalescence sets in. This is usually prolonged, and there is distinct liability to relapses.

Dangers.—Death may occur from nervous exhaustion or from heart failure due to the severity of the toxæmia; or serious hæmorrhage with perforation, due to ulceration of the intestines. Later, complications and sequelæ include phlebitis, jaundice, cystitis, arthritis, pleurisy, and other inflammations set up by the typhoid bacillus.

Types of the Disease.

The disease presents itself in the most varied forms, the mere enumeration of these will suffice :—

1. Mild or abortive.
2. Latent or ambulatory.
3. Ordinary, three or four weeks' form.
4. Prolonged ; and
5. Hæmorrhagic.

Diagnosis.

The diagnosis is sometimes a matter of difficulty especially in the early stages. The symptoms of typhoid fever may be closely simulated by the following diseases : —influenza, tuberculous meningitis, appendicitis, pneumonia, malaria, ulcerative endocarditis, and gastro-enteritis.

The most valuable diagnostic test is the Widal reaction. A small part of the patient's blood is mixed with a pure culture of typhoid bacteria in the laboratory : if the bacilli agglutinate, it indicates that the patient has, or has had, typhoid fever. A negative Widal test does not necessarily contra-indicate the presence of the disease. A negative Widal's reaction is useless for diagnostic purposes until the tenth day. Similar tests should in doubtful cases be applied to organisms of the para-typhoid group.

Prognosis.

The prognosis is always guarded. Especially unfavourable features are the persistence of muttering delirium, marked abdominal distension, persistent diarrhœa, continued dryness of the tongue, and a low temperature in cases where the infection is obviously serious.

Treatment.

In treating typhoid fever it is desirable to keep in view the chief dangers. Perforation of the bowel causes about 18 per cent. of the deaths; hæmorrhage about 15 per cent.; respiratory complications, bronchitis, and pneumonia about 20 per cent.; so that at least 50 per cent. of the deaths in typhoid fever occur from other general conditions—asthenia, hyperpyrexia, or by general septic poisoning. Keep in view the importance of treating the patient and not the disease. Remember that enteric fever is essentially a toxæmia for which there is no anti-toxin, except that which is manufactured in the patient's own blood. The aim of treatment therefore is to maintain, and if possible raise, the resistance of the patient.

All patients should be kept in bed from the earliest possible moment. The use of the bed-pan is essential, so that the maximum of rest may be obtained. All excreta should be passed into vessels containing disinfectants. Careful attention to oral hygiene must be enjoined.

The dieting of the patient is all important. Various systems of feeding are advocated by different authorities. In no disease is the question of diet of greater importance than in typhoid fever. The disease is a serious one, on account of its usually protracted nature, with its corresponding drain on the patient's general strength. It is, therefore, of paramount importance to maintain the strength of the patient, but in doing so due regard must be paid to the lesion in the intestine (ulceration) which is usually present, and also to his impaired digestive powers. At the same time we must recognise that it is perhaps more true of this disease than of any other that we must treat the patient and not the disease. The truth of this is shown by a reference to the different systems of diet that have proved undoubtedly successful in its treatment. Some recognised authorities find good results from the use of a fairly full diet containing much solid food, throughout the whole course of the illness; others adhere to the time-honoured system of a milk diet during the acute phases of the disease. Both systems appear to be equally successful, and from this we may conclude that the diet has to be judged, more from the nature and amount of the residue which it leaves in the small intestines, than from the form in which it is taken into the stomach. It is probable that in certain cases a residue of undigested solid curd, from an exclusive milk régime, produces much more local and general disturbance of an unfavourable nature than the residue from a fish, chicken, or meat diet. In this connection it must also be borne in mind that in some cases the local lesion in the bowel is of a very slight character, there being little or no demonstrable ulceration. In the present state of our knowledge, it may be said that the most judicious system of feeding is that which relies largely on a milk régime.

We shall therefore first describe this system in detail, and thereafter consider the other dietetic régimes that are recommended.

Milk régime.—Milk should form the chief food, and much attention to detail is necessary in its administration. It is specially important to watch the stools closely. If the motions contain undigested curd, it is clear that the amount of milk given, or the form in which it is administered, is unsuitable, and an immediate change in the diet is called for, on account of the risks to the patient from the mechanical presence of lumpy curds, and from the abdominal distension due to the fermentative changes in the food. If attention be paid to the following points, milk will seldom fail as a diet in typhoid fevers. It should be given well diluted, it should be administered at regular intervals only, the total amount should not exceed from two to three pints per day, and the motions should be inspected daily for the presence of undigested curds.

The milk should be diluted with plain hot water in the proportion of one to three, or one to four. The warmth of the mixture assists digestion by not chilling the stomach, and the dilution prevents the curd being too hard. If the bowels are costive, fluid magnesia (Dinneford's) can be used as a diluent and added to the warmed milk; if the bowels have a tendency to be loose, lime-water is the best diluent. The amount of milk administered in twenty-four hours is important. It must never be used as a quencher of thirst, but always as a food: it must be taken at regular intervals and in stated amounts. The prescribed quantity should be taken at the proper time, and no milk should be allowed to stand at the bedside; this precaution ensures the stomach having time to empty itself. The amount of milk given should be limited; three ounces every two hours, *i.e.*, under two pints in the twenty-four hours, is enough at first; if this does not cause curd in the stools the quantity may be increased up to three or four ounces every two hours. No interval of longer than three to three and a half hours should be allowed during the night without food.

The presence of undigested curd, whether in large masses or flakes, shows that either sufficient attention to detail in the administration is not being observed, or that the patient is getting more milk than he can digest. A reduction of half an ounce from the two-hourly feeds will often be sufficient to stop the presence of curd, and the improved digestion will probably put an end to the slight diarrhœa that may be present. If this does not prove sufficient, malted milk may be used, or the milk may be partially or completely peptonised. These modifications in the manner of administration are helpful in patients troubled with meteorism. Whey is a good substitute for milk if the latter is not tolerated. During this period very special attention is necessary to the toilet of the mouth.

Milk diet is very monotonous, and if a patient is not suffering from diarrhœa or blood in the stools, there is no reason why this monotony should not be relieved after twenty-fours hours by the administration of some of the meat broths. An allowance of chicken or beef-tea, or clear consommé, is much appreciated, and can be given well salted. Most enteric patients crave for salt, and there is no reason why it should not be supplied. The actual food value of these preparations is small, but they help digestion by acting as stimulants. A well-recognised method of administering the meat-tea juices is to give a daily allowance of a pint, divided into three portions. One portion should be given as the dinner meal, the second portion, given hot, about nine o'clock p.m., helps the patient to go to sleep, and the third quantity may be given in the early hours of the morning.

If diarrhœa is persistent, the warm meat-broths tend only to aggravate it; it is then better to use raw-meat juice, or one of the many meat extracts on the market. Meat juice may be prepared at home, and given in two-teaspoonful doses, slightly salted. The meat extracts should be given cold, and mixed with a little water. Bovinine and Wyeth's meat juice are excellent, but the strong meaty flavour is much disliked by some patients. Brand's chicken jelly is very agreeable, and so is home-made chicken essence.

Indication for increasing the diet in convalescence.—Assuming a patient has satisfactorily passed through his fever, and his temperature is approaching the normal line, when is the first increase of diet to be made? Much depends upon the circumstances of the individual case. Unless he is really hungry, there is no particular advantage in making any addition to the diet till the temperature is steadily normal. By "real hunger" is to be understood a genuine craving for food; that is to say, it is not enough for the patient to reply that he is hungry when asked. He must volunteer the information himself. If his hunger is real, and all precautions to satisfy a false appetite have already been taken, some addition to his food may be allowed when his temperature is normal in the mornings, the evening readings being disregarded. Should his diet, up to this point, have consisted exclusively of milk and meat broths, with a few extras that may have been permitted in prolonged cases, it is obvious that, before he is allowed solid food, he must be content with semi-solids and "sloppy" materials. Benger's food or boiled bread and milk is usually the first addition, and the effect of even this slight increase of diet on the temperature of the patient should be carefully noted. If the morning temperature remains normal, the bread and milk is continued for two or three days, the amount given being gradually increased, and a little well-made oat-flour porridge being added to give variety.

Value of water-drinking in typhoid fever.—Thirst should be assuaged by the drinking of a large amount of plain water, from four to six pints of water being given daily. In addition to assuaging thirst, an abundance of water-drinking promotes elimination of the toxins. When an insufficient amount of water is taken, the tongue gets very dry, even when the mouth is being carefully attended to. Aerated waters should be avoided, as tending to induce flatulence. Imperial drink, or an acidulated drink made with a few drops of hydrochloric acid and a little syrup of lemons, is also of value in allaying thirst. Weak tea made with milk is permissible, except in cases troubled with insomnia.

Other systems of feeding.—The system of feeding above outlined may be taken as the one generally recognised as the most suitable for the feeding of typhoid fever cases. Reference must, however, be paid to other systems which have found favour with recognised authorities. Many American authorities approve of a full diet along the following lines :—

> 1. Milk in various forms, such as hot or cold, with or without salt ; may be diluted with lime-water, magnesia, or plain water, or with the aerated waters—*e.g.*, Apollinaris, Vichy, soda-water. Peptogenic milk or peptonised milk, milk with white of egg, buttermilk, koumiss, whey, milk with tea, coffee, or cocoa.

2. Soups—beef, veal, chicken, tomato, potato, oyster, mutton, pea, bean; carefully strained and thickened with rice flour, arrowroot flour, milk, cream, egg, or barley.

3. Horlick's malted milk, Mellin's food, somatose, etc.

4. Beef juice, meat juices, bovinine, peptonoids.

5. Gruels (strained), barley-water, toast-water, and albumin water.

6. Eggs, soft-boiled, raw, or with egg flip.

7. Finely minced beef, scraped beef, oyster, well-boiled puddings, blancmange, and jellies.

A liberal dietary is held to be a very important factor in the treatment of convalescence. As soon as the morning temperature is satisfactory, solid food should be increasingly given, provided the patient be genuinely hungry. This increased dietary is not only of special service in the treatment of convalescence in cases running a normal course; it may be of great service in cases which show a prolonged swinging temperature in the convalescent period.

Medicinal treatment.—In simple uncomplicated cases there is little call for medicinal treatment. Tepid sponging or immersion in a cool bath should be relied upon to reduce the temperature and to relieve any delirium which may be present. A low delirium is often an indication of the need of stimulants. Sedative drugs are seldom advisable. The best is bromide of potassium combined with a little chloral. The hypodermic use of strychnine is occasionally useful as a stimulant. If constipation is at all troublesome, it is best treated by an occasional enema. Tonics are useful during convalescence.

CHAPTER VIII.

GENERAL CONDITIONS.

RHEUMATISM AND RHEUMATOID ARTHRITIS.

These disorders are of bacterial origin, the sources of infection being, as a rule, the teeth and gums, tonsils, digestive tract, or the genito-urinary tract. As in other infective disorders, attention must be directed not only to the infective agent, but to the soil, hence the importance of hereditary influences. The influence of chill and faulty feeding are additional factors of importance. The former acts by lowering the resistance of the tissues to the bacteria in the throat and respiratory tract, and also by its depressing action on the skin. Faulty feeding acts mainly through its action in inducing an abnormal bacterial flora in the digestive tract, with resulting formation and absorption of bacterial toxins.

In rheumatism the poison affects the muscular tissues, the subcutaneous fibrous tissues, or the nerves, producing either myositis, fibrositis, or neuritis ; a combination of the two former is quite common, leading to a fibro-myositis most frequently observed in the region of the neck, back, buttocks, and thighs.

In rheumatoid arthritis the poison settles largely in the joint structures, inducing an arthritis of a characteristic type. Too much attention, however, must not be directed to the joint condition. Many other tissues are involved which are of primary significance. The joint deformities characteristic of rheumatoid arthritis are to be regarded as the result of the disease, and are preventable, if the condition is properly investigated and treated in its early stages. The advanced cases of rheumatoid arthritis that we see in the wards and in private practice are a serious reflection on the medical profession. If the cases are adequately investigated along modern lines in the early stages of the disease, the condition can be cured.

Course of Rheumatoid Arthritis.

The course of the disease varies very widely. The disease may commence insidiously and without fever; in other instances it is ushered in by fever which may last for days or for weeks, the clinical condition closely simulating an attack of simple rheumatic fever, but differing from that condition in so far as the pain is not relieved by simple anti-rheumatic remedies (drugs of the salicin series). A painful enlargement of various joints sets in. the joints most affected in the earlier stages being, as a rule, the fingers, wrists, ankles, and knees. In severe cases, nearly every joint may be more or less involved, a condition of very marked crippling and deformity being induced. There may be some difficulty in mastication, due to involvement of the temporo-maxillary joints. In association with the joint involvement there is muscular atrophy and corresponding general asthenia, anæmia, increased pulse rate, general debility and ill-health. Physical examination generally reveals some well-marked focus or foci of infection in the teeth and gums, tonsils, digestive tract, urinary tract, or uterus. This focus of infection is only determined by a careful routine examination into the state of the different mucous surfaces. Long-standing constipation or digestive trouble is frequently noted in the history, and examination by means of the X-rays often throws valuable light on the source of the trouble. A bacteriological examination of the urine or other secretion is also frequently necessary.

Principles of treatment.

The first essential is the investigation into the source of the infection ; this often involves investigation for a week or two on the part of the physician aided by the nurse ; this may involve the careful and repeated examination of the stools, a bacteriological examination of the urine, examination of the digestive tract by means of the X-rays, and careful investigation into the condition of the teeth, gums, and tonsils. The results of this investigation will necessarily guide the physician to a large extent in regard to treatment. It may be that the results of this investigation point clearly to the advisability of a preliminary operation on the teeth, tonsils, appendix, or the uterus. Valuable time may be wasted by neglect of this essential, and by prolonged treatment merely directed to relieve the symptoms of the disease. Keeping this point in view we may now pass to the detailed consideration of the medical measures that are generally applicable in all cases. The extent to which each and all of these are applicable will necessarily vary in proportion to the severity of the condition.

Detailed consideration of medical measures in a case of Rheumatoid Arthritis.

1. Rest.—This may be complete or partial in proportion to the number and nature of the joints affected and the degree of asthenia. Careful discrimination is necessary in the selection of cases that are to be kept in bed.

2. Change of climate.—There is no question that there is an advantage in living in an atmosphere of sun and heat, under conditions which promote free diaphoresis and tend to maintain suppleness of tissues. Unfortunately the change of climate or even change of district is often impossible in cases where it might be desirable.

3. Attention to the *prima via*—the digestive tract. In as much as in most cases the bacterial infection arises from the digestive tract, it is imperative that attention should be assiduously directed in this direction. The possibility of there being a focus of disease in the appendix has already been referred to. Dilatation of the stomach or colon, with constipation and colitis, is very commonly present. These have to be combated by a judicious use of the following :—aperients including calomel, salines, petroleum, intestinal lavage, and skilled massage, with exercises directed to restore the tone of the abdominal and intestinal muscles.

4. Diet.—This must be adapted to modify the abnormal bacterial flora which is present in most cases, its presence being revealed by the persistently offensive condition of the stools. No hard and fast

rules can be laid down with regard to diet. Occasionally a few days preliminary semi-starvation is of great value. Similarly for a few days a diet restricted to milk—which may be diluted, and buttermilk may prove serviceable. As a general rule meat foods should be much restricted. The judicious restriction of starches and sugars is usually indicated, so as to diminish the tendency to flatulence which is frequently present. Puddings may be advantageously selected from custard, curds, jellies, stewed fruit without added sugar. All foods should be simple, fresh, and appetising, avoiding condiments and made-up dishes. Soups are often best avoided, or at most a little clear soup allowed. Assistance in the feeding of these patients is given in the chapter on Auto-Intoxication (see Chap. IX.).

5. Drugs administered for their antiseptic action, direct or indirect. These include calomel, salol, kerol, quinine, and liquid paraffin.

6. Measures for the temporary relief of pain.—These include drugs such as phenacetin, antipyrin, and aspirin, also external applications such as hot fomentations or local application of hot air. In some cases benefit is obtained by ionisation.

7. The function of the kidneys is promoted by giving ten ounces of hot or cold water twice a day on an empty stomach, with or without a little alkali such as potassium acetate, or sodium bicarbonate.

8. The excretory function of the skin should be stimulated by occasional hot baths of short duration,

and by a daily dip into cool to cold water, followed by a thorough shampoo. Massage under a spray is often a valuable therapeutic measure.

9. Massage and exercise.—The skilled use of massage with physical exercises is one of the most important agents we possess at certain stages of the disease. For many cases, however, it is useless and contra-indicated. Much depends upon the degree of involvement of the joint, upon the amount of structural change which has resulted, and upon the degree of muscular atrophy associated with it. Great care is required in prescribing massage in these cases.

10. Dentifrices.—The use of an antiseptic dentifrice may be indicated. Attention has already been directed to the fact that operative measures may be required to remove decayed teeth, to correct severe pyorrhœa, or to evacuate the local abscesses in the gums, which are often present.

11. The use of bacterial vaccines.—In many cases an autogenous vaccine, prepared from bacteria isolated from the urine, from the diseased gums, or from the stools is strikingly beneficial.

12. In many cases where the infection is obviously coming from the bowel, a course of lavage is indicated. Where that fails to effect improvement the desirability of operative procedure requires consideration. The operation may take the form of an appendicostomy, and subsequently washing out the colon, or a colectomy which may be partial or complete.

All the measures above described in treatment are directed either to eliminate the rheumatic poison directly, or to improve the resistance of the tissues in such a way as to counteract its effects. An autogenous vaccine acts in the latter direction, only on rather more specific lines. Greater value attaches to the use of an autogenous vaccine than to the various preparations known as stock vaccines, and phylacogens.

The measures outlined above are applicable in the treatment of a number of rheumatic conditions, such as sciatica, lumbago, neuritis of rheumatic origin, and so-called simple rheumatism.

GLYCOSURIA AND DIABETES.

In health the ingestion of a mixed diet containing a moderate amount of sugar and starchy foods is not attended by the passage of sugar in the urine. The sugars and starches of the food undergo a series of chemical changes, being burnt up in the tissues, and forming a source of energy and heat production. In disease there is a defect in the mechanism of digestion and assimilation of carbohydrate foods, with the result that sugar appears in the urine (glycosuria). Even under normal conditions the power of sugar destruction in the body is not unlimited, since, if a large excess of sugar be taken in the food, sugar appears in the urine. This is known as alimentary glycosuria. In all probability this alimentary glycosuria is simply the mildest form of the diseased state, which in an advanced stage is true diabetes, or diabetes mellitus. In this condition the sugar in the urine is derived from the starches of the food as well as from the sugars. Diabetes may be of a mild or a severe type. In the former the amount of sugar in the urine can be controlled to a very great extent by diet; in the latter, sugar continues to be excreted in the urine, it may be in large amount, even although the diet is free from sugar and starchy food.

In every case in which there is doubt as to the severity of the disease, recourse should be had to a test diet. If a diet free from carbohydrate does not cause the sugar to disappear from the urine, the patient is suffering from a severe form of the disease. Care must be exercised in the application of this test, and it is as a rule advisable not to apply this rigid test suddenly; the carbohydrates should be cut off from the diet gradually over a period of several days. In every case we must ascertain what amount of carbohydrate food the patient can tolerate without the appearance of sugar in the urine; in other words, given the presence of sugar in the urine, we must determine whether the condition is one of (*a*) alimentary glycosuria, (*b*) mild diabetes, or (*c*) severe diabetes.

Clinical features.

(*a*) GLYCOSURIA, or the passage of sugar in the urine, is frequently met with in adult life, more especially in stout subjects who indulge freely in sugar, starchy food, and who take too little exercise. It is usually unaccompanied by any symptoms, and is frequently only detected during examination of the subject for life insurance. The presence of sugar in the urine in such cases is an indication that too great a strain is being thrown on the patient's power of digesting and assimilating sugars and starches, and is an indication that the patient should be suitably dieted to correct it, otherwise a genuine diabetic condition may result.

(*b*) The clinical features of TRUE DIABETES are distinctive. The disease affects subjects ranging in age from eighteen to twenty up to forty. Exceptional cases are met with both in younger and in older subjects. The chief symptoms complained of are great thirst, the passage of a large amount of water, general weakness, and loss of weight. Associated symptoms which are frequently present are cough with expectoration, disturbances of the skin, more especially boils, constipation, and disturbance of vision—the last-mentioned being due to disease in the lens or the retina. Symptoms of peripheral neuritis are not uncommon. The urine is increased in amount, of high specific gravity, contains sugar in large amount, and in some cases acetone and diacetic acid are present.

Prognosis.

The prognosis is always a guarded one ; the younger the subject the more grave the prognosis. The chief risks are (1) the development of diabetic coma, (2) death from pulmonary and other forms of tuberculosis, (3) septic complications—abscess formation or gangrene, and (4) general exhaustion with pulmonary complications.

Principles of treatment.

The main essential in treatment is to restrict so far as possible the amount of carbohydrates to the amount which the patient can assimilate without the appearance of sugar in the urine. This involves the use of foods rich in proteins and fats, and the restriction of, or it may be the abstention from, all sugars and starchy foods. The deprivation of starchy foods in the form of bread and bread foods is a great trial to the patient. Most of the substitutes prescribed as diabetic foods are not very palatable; they are, further, expensive, and to many the restriction becomes so irksome that the strictness of the dietary has to be relaxed. The diet must not be regulated exclusively by its effects on the urine. On a given diet the sugar may steadily diminish, while at the same time the general condition of the patient deteriorates. Further, the type of the disease has to be considered. Thus the dietetic treatment of diabetes in an obese adult, or in an elderly subject, is a simpler matter than the treatment of the severe form of the disease met with in young subjects in whom there is much wasting and general weakness. The weight of the patient is a very important guide in the treatment, and has to be continually noted throughout the progress of the disease. The toleration limit for carbohydrates is another factor to be noted. We must determine the extent to which the excretion of sugar can be affected by dietetic means. A further point that should be attended to is to make the changes in the dietary gradually; in many cases of diabetes there is danger associated with the sudden removal of carbohydrates. Lastly, it is important to make the food as appetising and varied as possible.

In the successful dieting of diabetic patients the principle to follow is to exclude as much as possible the starches and sugars from the food; to replace these important articles of food by fat, so that the body may not lack entirely fuel food. To do this, and still allow the diet to be varied and appetising requires a considerable knowledge of foodstuffs and cookery.

The main rules to be observed are as follows :—

1. No sugar or articles of food containing sugar.
2. Restriction of all foods that contain starch.
3. The great deficiency caused by the above restriction to be made up by fat, and not by excess of meat.

The lists below give the allowable foods, and those that are not permissible, and upon this the menus are framed. It is unfortunately almost impossible to get a satisfactory diabetic diet that is not expensive.[1]

FOODS.

* These should be boiled in a large amount of water.

MAY EAT.	MAY NOT EAT.
Butcher meat of all kinds except liver.	Sugar in any form.
Tongue, ham, bacon, or other smoked, salted, dried, or cured meats.	Wheaten bread, and ordinary biscuits of all kinds.*v*
Poultry, game.	Toast, rice, arrowroot, cornflour, oatmeal, sago, tapioca, macaroni, vermicelli.
Fish of all kinds, fresh, salted, or cured ; shellfish, except the bodies of lobsters and crabs.	
Animal soups, not thickened with any starchy materials ; beef-teas and broths.	Potatoes, carrots, parsnips, beetroot, peas, Spanish onions.
Eggs, dressed in any way.	Pastry and puddings of all kinds and honey.
Cheese, cream cheeses, butter, cream.	

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[1] A full list of dietaries is given in the author's text-book, "Food and Feeding in Health and Disease."

FOODS—*continued.*

MAY EAT.	MAY NOT EAT.
Greens, spinach, turnip-tops, French beans,* Brussels sprouts,* cauliflower.*	All fruit, fresh and preserved except lemons and unripe fruit.
Broccoli,* cabbage,* asparagus,* seakale,* vegetable marrow, lettuce, cucumber, tomatoes, mushrooms, mustard and cress, watercress, endive, spring onions, leeks, celery, rhubarb, pickles.	Liver. Oysters. Cockles and mussels, and crabs.
Oil, vinegar.	
Savoury jelly ; jellies and custards, sweetened with saccharin ; blancmanges made with isinglass or gelatine.	
All nuts, except chestnuts ; olives.	

BEVERAGES.

MAY DRINK.	MAY NOT DRINK.
Tea, coffee, cocoa from nibs, dry sherry, claret, dry Sauterne, Burgundy, Chablis, hock, brandy, whisky, and other unsweetened spirits ; unsweetened aerated waters ; milk (limited to 1 or 1½ pints daily) ; kephir, sugar-free milk.	Milk, except in limited quantities ; sweet ales, porter, stout, cider ; all sweet wines, port, Tokay, champagne, liqueurs; fruit juices and syrups ; cocoa and and ordinary chocolate.

In these tables we see that milk is allowed only in limited quantities, on account of the four per cent. of carbohydrate in the form of lactose. This is the most assimilable form of sugar, and in severe forms of diabetes when there is much impairment of digestion, it is probably often the best food, on account of its protein, its richness in fat, and the solubility of its sugar.

If milk is considered inadvisable, an artificial milk can be procured free from sugar ; this can be diluted with mineral water. Cream has mainly to replace milk in the special cookery, being almost free from lactose, and it has the great advantage in containing the most easily digested form of fat.

The following recipe of home-made artificial milk prepared from cream can be taken in unlimited quantity by diabetics, and is a most useful article of food :—

> SUGAR-FREE MILK.—Place four tablespoonfuls of cream in one pint of water. Mix well. Allow to stand for twelve hours. Then skim off the fat and place in a second vessel ; to this add water (cautiously), a pinch of salt, a trace of saccharin, and a little white of egg, until the fluid has the consistence and colour of ordinary milk.

A second form of milk containing only a little sugar, may be made by dissolving cream, and especially Devonshire clotted cream in water.

A third artificial milk, practically free from sugar, can be made from biogene powder and milk albumin, as follows :—

> To a glass of water a teaspoonful of cream and one or two tablespoonfuls of biogene powder is added, and well mixed.

The supply of abundance of fat is often a difficulty, but fish and vegetables should be cooked and served with a liberal amount of butter. The fat of beef, mutton, and bacon is very suitable. Many patients can readily take the fat of cold roasted beef, and ham, or bath chaps (pig's cheek) ; and large quantities of fatty food can be taken in this way. Bone-marrow, which consists almost entirely of fatty material, may be used in various ways.

Medicinal and other measures.

Drugs play a subordinate rôle in treatment, but they are undoubtedly useful. The most useful are—aperient remedies directed to the careful regulation of the bowel, this being one of the most important points in treatment. The development of constipation is very liable to be followed by symptoms of diabetic coma which as a rule is speedily fatal. Opium in the form of morphia or codeine is frequently employed to reduce the sugar formation : it is undoubtedly beneficial in some cases, but cannot be regarded as curative. An occasional starvation for twenty-four or thirty-six hours is of great value in at any rate temporarily reducing the sugar in the urine, and in some cases this expedient has some permanent value. There are, in addition, various special forms of cure and diets which need not be specially described ; the number of these may be taken as a measure of their limited value. Sufficient has probably been said of the treatment under the heading of "Principles." Here as in other conditions, it is necessary to keep in view the importance of treating the patient as well as the disease.

POISONS.

An introductory note on the nature of poisons and on their general treatment will help to explain their clinical features and their management.

The Nature of Poisons.

A poison is a substance which, either on being absorbed into the living organism, or by its chemical action on the tissues, injures health and destroys life. Among the conditions which have to be taken into consideration when estimating the injurious effects which may be produced by poisons are: age, idiosyncrasy, habit, state of health, presence of food in the stomach, and the mode of administration of the poison. When a poison is swallowed, its action tends to be materially modified by the presence of food in the stomach. If the stomach is empty, a corrosive poison exerts its full influence on the coats of the stomach, while if it contains solid food, some of the corrosive action of the poison is spent on the food. Absorption takes place more slowly on a full stomach than on an empty one.

Nearly all the cases that come into our wards are cases of attempted suicide. The poisons most commonly employed are :—

(*a*) Narcotic poisons,—*e.g.*, opium, veronal, etc.

(*b*) Corrosive and irritant poisons,—*e.g.*, carbolic acid, turpentine, oxalic acid, ammonia, etc.

(*c*) Poisonous gases, of which the best example is coal gas.

The General Treatment of Poisons.

The general indications are :—

(*a*) To remove or neutralise the poison left in the stomach or bowel.

(*b*) To counteract the effects of that which has been absorbed.

(*c*) To promote its elimination.

(*d*) To keep the patient alive until the effects of the poison have passed off.

(*e*) To alleviate the pain and other symptoms.

Emetics are of great value. Half a teaspoonful of sulphate of zinc, dissolved in a few ounces of hot water, is a useful emetic of a non-depressing nature ; or two teaspoonfuls of mustard in a little warm water. A hypodermic injection of one-tenth of a grain of apomorphine is valuable. Tickling the fauces with a feather, and the administration of copious draughts of warm water are additional useful measures.

The most efficacious way of emptying the stomach is, however, by means of the *stomach tube.* The alternate introduction and withdrawal of warm water should be persevered in until the washings are clear and free from odour. Neither the stomach pump nor the tube nor emetics are to be used in cases of corrosive poisoning ; the proper treatment in such cases is to neutralise the poison. Carbolic acid is an exception to this rule. The stomach tube is especially useful in cases of poisoning by opium, chloral hydrate, alcohol, phosphorus, the crystals and most of the mineral irritants and the alkaloids. In strychnine poisoning it may be necessary to administer chloroform before the tube can be passed. After evacuating the stomach a purgative should be given unless spontaneous purging has occurred.

Antidotes are remedies which counteract the effects of poisons. Their action is either chemical, mechanical, or physiological. A mixture of flour and water is an example of a mechanical antidote. Magnesia acts chemically in the case of mineral acids ; and atropine is to some extent a physiological antidote to morphine.

The means to be taken to keep the patient alive until the effects of the poison have passed off are determined by the nature of the poison. External warmth, the administration of stimulants, artificial respiration, are most useful measures. So also are aperients and diuretics, and other measures directed to allay excessive pains, vomiting, or other symptom.

The table on facing page gives a useful epitome of the most common poisons and their treatment.

OPIUM AND MORPHINE POISONING.

Laudanum and chlorodyne are the two main preparations used in cases of opium poisoning. Laudanum consists of 0.75 per cent. of morphine. Chlorodyne consists of four grs. of morphine hydrochlorate to the ounce.

Symptoms.

The earlier symptoms are those of excitation of the nerve centres. These develop within a few minutes to an hour or two, depending upon the amount taken. The action of the heart and lungs is accelerated, the face is flushed, and the mental condition is exalted.

TABLE OF POISONS AND TREATMENT.

Poisons.	*Emetic.*	*Stomach Tube.*	*Antidote.*	*General.*
ACIDS—				
Sulphuric Acid. (Oil of Vitriol.)	No.	No.	Carbonate of magnesium; whiting, or wall plaster; soapy water if above not obtainable.	
Nitric Acid.	No.	No.	As above.	
Hydrochloric Acid. (Spirits of Salt.)	No.	No.	As above.	
Oxalic Acid. (Salts of Lemon.)	No.	No.	Chalk or whiting suspended in small quantity of water or milk.	
Salts of Sorrel.	No.	No.	As above.	
Acetic Acid. (Vinegar.)	No.	No.	Magnesia or the alkalis.	
Carbolic Acid.	No.	Yes; with special care.	Magnesium sulphate or saccharated lime.	White of egg and milk may be given.
Hydrocyanic Acid. (Prussic Acid.)	Yes.	Yes.	Antidotes of little value. Free stimulation.	Artificial respiration may be necessary.
ALKALIS—				
Caustic Soda.	No.	No.	Vegetable acids in form of dilute vinegar or lemon juice, with olive oil and demulcents. Also milk, white of egg, olive oil.	Opium if necessary.
Caustic Potash.				
Ammonia.				
Zinc.				
METALLIC—				
Arsenic.	Yes.	Yes.	Freshly prepared ferric oxide, prepared by adding solution of ammonia and tincture of perchloride of iron. Stimulants.	Morphine.
Antimony. (Tartar emetic.)	Yes.	Yes.	Tannic acid or some substance containing it, *e.g.*, stewed tea.	Tea and morphine.
Phosphorus.	Yes.	Yes.	Turpentine 1 dram. in 1 oz. of water, repeated every twenty minutes for three doses.	Epsom salts. No oils.
LKALOIDS—				
Opium, including Chlorodyne, etc.	Yes.	Yes. Using with Condy's fluid.	Potassium permanganate, gr. x., in 8 oz. of water.	Stimulants. Electricity. Hot coffee, etc. Artificial respiration.
Strychnine. (Vermin killer.)	Yes.	Yes. (under Chloroform.)	Chloral hydrate, gr. xx. Pot. bromide, gr. xxx.	Artificial respiration.
Belladonna.	Yes.	Yes.	Pilocarpin, $\frac{1}{3}$ to $\frac{1}{2}$ gr. Morphia, $\frac{1}{4}$ gr.	Strong tea or coffee.
Cocaine.	Yes.	Yes.	Free stimulants.	Artificial [respiration.
Sulphonal.	No.	No.	Stimulants, *e.g.*, digitalis or strychnine.	Heat.
Trional.				Artificial respiration.
Veronal.				

This stage is very short-lived, and may indeed escape observation. The next stage begins with a feeling of lassitude, heaviness of the head, giddiness, and progressively increasing tendency to sleep. The patient becomes drowsy and sinks into a condition of stupor. The pupils are contracted, the pulse is slow, and the breathing deep and regular. He can be roused only with great difficulty. The muscles are relaxed, the surface cold and clammy, the face pale or cyanotic, the coma deepens, the pulse becomes slower, and the breathing irregular and stertorous. All the secretions save that of the skin are diminished. If laudanum be taken its odour may be perceptible in the breath. In fatal cases death occurs in from six to twelve hours.

Treatment.

If the poison has been swallowed, the stomach should be well washed out with a very weak solution of Condy's fluid. Attempts should be made to arouse the patient by means of external stimuli, such as flapping the face or chest with a wet towel, or the application of the faradic current to the skin surface. In the milder forms the patient should be kept continuously awake, by being walked about with the aid of assistants. In severe cases, he should be put to bed, warmth applied to the surface, artificial respiration resorted to if need be, and stimulants given in the form of hot coffee injected into the stomach and hypodermic injections of atropine and of strychnine.

The following illustrative cases were recently in the hospital :—

Opium Poisoning.

W. T., aged sixty-two, complained for some time of pain in the side and sciatica, which he endeavoured to relieve by taking laudanum, obtained in two different shops. He remembered buying laudanum and of boarding a car in Edinburgh, but nothing more. He was found by the police on the rocks at Portobello; he had fallen into the sea, and the immersion had wakened him.

On admission he was very collapsed; pulse feeble but regular, rate 80, respirations 20; pupils contracted.

Treatment.

Warmth and hot bottles; hypodermic injection of $\frac{1}{60}$th gr. of strychnine; stomach washed out with Condy's fluid; hot sponge applied to the præcordia, and frequent hot drinks. Gentle stimulation of the skin surface by faradic battery kept up at intervals, for over five or six hours to keep patient awake.

Patient improved steadily and was discharged on eighth day.

Chronic Opium Poisoning.

J. S., aged forty-two, had been taking six ounces of laudanum each day before admission. Was in the ward three years ago for treatment of morphia habit. After discharge began to drink whisky instead, and in the interval has been treated for delirium tremens.

On admission, patient was in a deplorable condition both physically and mentally, very degenerate looking, always pleading for drugs, many hallucinations of sight and hearing, anæmic, very nervous, tremulous, and frightened looking. Pupils contracted, muscles generally wasted, very restless, continually getting out of bed, but not violent. No albumin in the urine.

Treatment.

Rest in bed, warmth, administration of two drachms of laudanum, given in a little water, the dose being gradually reduced and stopped on the fifth day. Thirty grs. of bromide given each night to induce sleep. Two or three doses of calomel, followed by morning saline; later tepid baths. Diet of milk at outset with abundance of hot drinks. General tonics.

Made a slow but steady recovery, and went out apparently well in five weeks.

VERONAL POISONING.

In recent years there has been an increasing tendency on the part of the public for self-medication. The restrictions laid upon the chemist with regard to the use of scheduled poisons are of a very inadequate nature. Powerful drugs like veronal are too easily obtainable, the drug habit becomes established, and cases of poisoning result.

Symptoms.

These are most usually observed in the case of subjects who have been accustomed to take veronal as a hypnotic. Frequently by accident or design an excessive dose is taken, and serious or even fatal results ensue. The toxic symptoms are seen chiefly on the nervous system and circulation. A condition of excitement of a very acute character is frequently induced, which may pass into a condition of coma. In other cases the rapid development of unconsciousness is the most striking symptom, associated with a quick and feeble pulse, deep respirations, and disordered tongue. If such cases are seen early and the stomach washed out, the remains of the pellets may be removed by this means.

The following case was recently in the ward :—

F. T., aged thirty-three, found on the street unconscious with an empty box marked "Veronal" in his pocket.

Had been worried over recruiting, and suffered from sleeplessness. Was naturally a little eccentric or mentally weak.

On admission the patient was unconscious and came round slowly. Pulse 84, respirations 20, pupils moderate in size and equal.

Treatment.

Stomach tube was passed; stomach washed out. Hot bottles were applied; hot sponge over the præcordia; and hypodermic administration of $\frac{1}{100}$th gr. digitalin. Consciousness returned in a few hours. One gr. of calomel was given each night for three nights, followed by a morning saline. Later tonic treatment was given.

Patient made a good recovery and was discharged within eight days.

CORROSIVE AND IRRITANT POISONING.

A corrosive poison is one that destroys tissue by direct chemical action. An immediate and violent pain is induced on swallowing, uncontrollable retching and vomiting occur in a few minutes, the vomited matter comprising the contents of the stomach, and blood and mucus from the lining membrane. There is intense thirst and difficulty in swallowing. The patient is in a condition of extreme collapse, the surface of the skin pale, cold and clammy, the features are pinched, and the eyes present a terrified look. The mouth and tongue exhibit indications of corrosion, the colour and surface varying with the nature of the poison. The abdomen is usually distended, the pulse weak, of low tension and usually rapid; the breathing is laboured and noisy; the voice is hoarse; the mouth may be filled with a ropy mucus. The urine is diminished in amount. Death usually occurs within twenty-four or thirty-six hours, and may be preceded by convulsions. A corrosive poison, when administered in dilute form, may act as an irritant.

An irritant poison is one which sets up inflammation. The symptoms here do not come on immediately after swallowing, as is the case with corrosives: there may be an interval of a half to one hour, or more. The symptoms induced are usually a burning sensation, a sense of constriction in the throat, followed by pain which spreads over the abdomen, severe vomiting and purging, the discharged matter being often blood-stained; it is attended by collapse. In fatal cases death from exhaustion usually occurs in a few days.

Carbolic acid poisoning.

M. B., aged twenty-two, brought in by the police; found lying on the floor, moaning, and frothing at the mouth, with a small vial beside her which smelt of carbolic acid.

On admission she was dazed, moaning, and restless; appeared to be suffering pain; extremities cold, temperature 95° F., pulse 104, respiration 24; voice hoarse. No signs of congestion about the lips or tongue; uvula and tonsils slightly œdematous. No smell of carbolic from the mouth; no abdominal rigidity or tenderness. The urine was olive green in colour, and contained albumin and pus for a few days.

Treatment.

One ounce of Hendry's solution was given and swallowed without difficulty; she complained of discomfort immediately after. Half an ounce of ipecacuanha wine was given, which also failed to produce emesis. Stomach tube passed: contents smelt unmistakably of carbolic acid; stomach washed out with Hendry's solution. Was given $\frac{1}{60}$th gr. strychnine hypodermically; given milk and white of egg at short intervals, with two to three drachms of olive oil taken slowly every two hours; this being specially valuable to prevent inflammation and cicatricial contraction of the œsophagus.

The patient made a satisfactory recovery, the urine cleared up, and she was discharged well within three weeks.

Ammonia poisoning.

Ammonia is sometimes taken, as in the following case :—

Mrs R., aged thirty-eight, swallowed some mouthfuls of household ammonia in mistake for lemonade; was admitted four hours later. Vinegar and water had been given by the doctor at home, also milk and water to counteract the ammonia.

On admission, vomited a good deal of blood and mucus, complained greatly of pain in the mouth, lips, and epigastric region; the lips and tongue were burnt; the pulse increased in rate (116) and weak, respirations 20, temperature varied between 99° and 100° F.

Treatment.

The treatment consisted of the internal administration of olive oil, given in small doses every half hour, so as to prevent inflammation followed by cicatricial contraction of the œsophagus. Nourishment was given in the form of white of egg and milk; and heroin subcutaneously for relief of the pain. Hypodermic injection of strychnine, once daily, was administered for several days.

The patient did well for the first fortnight, swallowed easily until the seventeenth day, when she experienced great difficulty in swallowing due to the development of stricture, and lost weight considerably. A bougie was subsequently passed by the surgeon at regular intervals, which revealed slight contraction of the œsophagus.

The ultimate prognosis is guarded: it is possible that a gastrostomy may sooner or later be necessary.

COAL GAS POISONING.

The most common form of coal gas poisoning is met with in cases of attempted suicide, in which the patient —as in the case which will afterwards be described— shuts himself in a room, closes the windows, and turns on the gas.

Coal gas contains from four to eight per cent. of carbon monoxide. An atmosphere containing one per cent. of carbon monoxide would soon prove fatal to those who breathed it ; much less might do so if breathed for a considerable time. The toxic effects of the carbon monoxide are due to its affinity for hæmoglobin, with which it combines, and for which it has an affinity two hundred times greater than that of oxygen. The compound of carbon monoxide with hæmoglobin is more stable than that of oxygen, and so long as hæmoglobin is combined with carbon monoxide it is useless as an oxygen carrier ; if, therefore, more than a certain amount of the hæmoglobin be thus rendered functionless, death results from asphyxia due to arrest of internal respiration.

Symptoms of acute poisoning.

A sensation of heaviness in the head, giddiness, quickening of the action of the heart and lungs, oppression in the chest, and occasionally vomiting occur along with loss of muscular power ; unconsciousness quickly supervenes, sometimes with rigidity, and convulsions may precede death. The pulse is small, the skin surface cold, the conjunctivæ are congested, and the pupils somewhat dilated. The lips may be covered with froth.

In a fatal case the surface of the body is rosy red, due to the peculiar compound which the gas has formed with the blood. The symptoms are in proportion to the duration of the exposure, as well as the amount of gas present in the atmosphere inhaled.

The dangers are :—

1. Rapid death from asphyxia, with heart failure.

2. Respiratory complications—bronchitis, œdema of the lungs, and pneumonia.

Treatment.

The principle underlying treatment is to supply as much oxygen as possible, so as to replace the poisonous compound formed in the blood, and to stimulate freely, so as to tide the patient over the first day or two. The details of treatment are as follows :—

1. The inhalation of oxygen, and in severe cases the maintenance of artificial respiration.

2. External warmth promoted by hot bottles.

3. Free administration of stimulants given hypodermically, or by the rectum when the patient is unable to swallow—*e.g.*, ether, strophanthin (one sixtieth of a grain), and in cases unaccompanied by rigidity, strychnine (one-sixtieth of a grain), these being administered two or three times a day according to the severity of the condition.

4. Attention to the bladder and bowels; a catheter may be required, and a free purge, followed by the administration of a rectal saline is useful.

5. If the patient survives twenty-four or forty-eight hours, and respiratory complications set in,

treatment must be directed to the bronchitis or pneumonia which develop.

6. Frequent change of the position of the patient, and nourishment administered in the form of small quantities of nourishing food are indicated.

The pulse and temperature will form a guide to the amount and nature of the stimulant required.

After twenty-four hours the patient referred to recovered consciousness and talked quite rationally. His colour and general appearance improved, and his temperature, which was 96 on admission, rose to over 101° F. The pulse rate is 96. His lungs show now some evidence of bronchitis, with œdema at the base, but in view of his improved condition generally the lung complications should be easily overcome with care and attention.

Unfortunately the initial improvement in the general condition of the patient on the second and third day after admission was not maintained; the patient appeared to have no desire to live, respiratory complications became more pronounced, the heart gradually weakened, and the patient died six days after admission.

ACUTE ALCOHOLISM.

INCLUDING

Alcoholic Coma, Alcoholic Insanity, and Delirium Tremens.

Alcoholism is a disease of the nervous system due to alcoholic excess. The disorder is manifest in volitional defect in relation to the appetite for alcoholic indulgence, but which later becomes manifest in relation to conduct in general. In cases of alcoholism the highest cerebral functions suffer first, but there are in most cases impairments of motor and sensory power, and in the trophic functions of nerves, frequently accompanied by definite visceral changes.

A few words may be said on intoxication. After the first stage of general exhilaration, the normal effect of alcoholism on the nervous system is of the nature of an obliteration of the functions which constitute self-direction, and which imply a full consciousness. By degrees the person becomes less aware of everything, of his surroundings, and of himself. He may realise this as a drowiness which is creeping over him, and he may abstain. If he continues to drink, he will become comatose, or if he has drunk a great deal before, he falls asleep. Such a man becomes unobtrusively intoxicated. He may never be suspected of drinking greatly to excess.

Intoxication in the more popular sense is much more recognisable; it may take the form of stimulation with excitement, or excess of activity, or narcosis with paresis or diminution of activity. This paresis may be unequal in its effect; thus the motor centres may be chiefly affected so that the man may keep his head but lose his legs. The most obvious type of the class of excess is the drunk and disorderly person who shouts or dances, and is destructive long before he has lost his head, this representing an excess of activity in the motor centres which is disproportionate to the general narcosis. The effects of intoxication depend to a great extent upon the person, the nature of the drink, and the mode of drinking. There are several types of acute alcoholism which merit special description, and which can be illustrated by cases among hospital patients; these comprise alcoholic coma, alcoholic insanity, and delirium tremens.

A. Acute Alcoholism—Alcoholic Poisoning, or Alcoholic Coma.

This is occasionally seen as a sequel of a silly wager as to the amount of liquor that a man or boy will take in a short time. It also occurs, however, as a consequence of lack of prudence under the influence of alcohol. The symptoms are those of coma, and need not be given in detail. The diagnosis, however should always be arrived at with great care. There should be a strict rule that all persons found comatose in the street should be taken to hospital or examined by a doctor before being confined to the prison cell. The conditions which require to be excluded in diagnosis are, head injury, cerebral hæmorrhage, embolism or thrombosis, uræmic or diabetic coma, and narcosis from some drug other than alcohol. A difficulty which presents itself is that the case is sometimes complicated, the patient having taken some liquor prior to the development of one or other of the above conditions. In pure cases the diagnosis is easy, the patient is unconscious, the pulse may be full and bounding while the respirations are deep and slow, the pupils are dilated, the temperature, in the absence of complications, is sub-normal and the same on both sides, muscular twitchings may be present, and reaction to stimulation may be evoked in the muscles, or the patient may be incited to speech.

B. Acute Alcoholism—Alcoholic Insanity.

Alcoholic insanity is really an incident in the general development of alcoholism. The disease occurs in persons who are predisposed to neurosis, and who have drunk to excess. It is most commonly seen between the ages of twenty-five and thirty-five. There are various types of mental derangement; melancholia is common, and is often associated with marked delusions, which frequently have a basis in hallucinations. These cases are often attended by impulsive violence, the patients being dangerous to themselves and to others. Another group of cases is characterised by mania which may be exalted, hilarious, and sometimes delirious. There may be difficulty in diagnosing cases of acute mania of alcoholic origin from the early excited stage of general paralysis.

C. Acute Alcoholism—Delirium Tremens.

This is essentially an insanity of short duration occurring in the course of chronic alcoholism. The attack may be determined by temporary excess, or may be precipitated by the occurrence of an accident, or an acute illness, *e.g.*, pneumonia. The patient will be found to be a confirmed tippler, though he may never have been actually drunk. At the outset of the attack, the patient may be sleepless and show great distaste for food. He is markedly tremulous, conversation may be incoherent, and his attention difficult to fix. The more acute symptoms come on at night, and are characterised by great restlessness, delirium, talking constantly, and great suspicion. Visual hallucinations are present, usually of a terrifying nature; small and large animals are seen on the wall, on the floor, or on the bed. The tongue is moist, tremulous, and furred with a thick, whitish-yellow fur, the pulse is rapid and soft, the temperature is slightly raised, the urine is scanty, and albuminuria is not infrequently present. After a few days, in a mild case, the symptoms subside, sleep and appetite return, but the tremors disappear more slowly. In more severe cases the disease is more protracted, and mental symptoms may remain. All patients should be carefully examined for evidence of acute disease, more especially pneumonia, heart disease, and albuminuria, the symptoms of which may be latent.

Treatment.

The treatment of acute alcoholism may be discussed under two heads, the immediate medical treatment, and the remote treatment which is essentially of a prophylactic character. We will here discuss shortly the practical points in treatment which we find necessary in the acute cases that come under our observation in the wards. The details of this treatment will necessarily vary widely in different cases ; thus the treatment for a man in a condition of alcoholic coma, with a fairly satisfactory pulse and no indication of pneumonia, is different from that necessary in another man suffering from acute delirium with a rapid, feeble, soft pulse and well-marked symptoms of pneumonia. It is convenient to discuss the details of treatment under the following headings :—

1. Measures to keep the patient quiet.

Persuasive measures on the part of the nurse or attendant are of much value in many cases. In severe cases the patient must, however, be forcibly tied down, so as to diminish the strain and conserve his strength. Thorough sponging of the body is useful both in allaying any fever present and for its sedative effect. Drugs adapted to allay the general restlessness may be required, such as hyoscin gr. $\frac{1}{80}$ morphia gr. $\frac{1}{4}$ and bromides with choral hydrate. In prescribing these due regard must be paid to the condition of the heart and circulation, and to the state of the kidneys, and the effect of the drugs must be carefully watched.

2. The cessation of the alcohol.

As a general rule alcohol can be stopped entirely and abruptly with advantage, but in very severe cases, more especially where the alcohol habit has been prolonged, and symptoms of respiratory and cardiac failure are manifest, it is advisable to give alcohol fairly freely. There is little doubt that in such cases the sudden cessation of alcohol is decidedly prejudicial, and contributory to a fatal issue.

3. Drugs to promote sleep.

Sleeplessness is often a troublesome symptom. A warm stimulating drink at bedtime should first be tried, and a little digitalis or strophanthus may help the patient to sleep. Paraldehyde in doses of two drams or thereby is useful, and the bromides—bromide in combination with chloral—are among the most useful drugs. Large doses may be necessary, such as 60 to 120 grains of pot. bromide.

4. To counteract heart failure.

Various stimulants may be necessary to prevent the heart flagging and maintain strength generally, such as digitalis or strophanthus, ammonium carbonate, ether, strychnine, the two latter being given frequently hypodermically.

5. General measures.

These include :—

(*a*) A judicious clearing out of the bowel by one or more doses of calomel followed by a saline.

(*b*) The administration of a diet restricted to fluids, *e.g.*, milk, chicken tea, and diluents, with stimulants if required, as above indicated.

(*c*) Where the facilities are available, immersion in a bath at a temperature of 70° F. for twenty to thirty minutes or longer is useful in sthenic cases.

In most cases recovery from the acute symptoms takes place in from three or four to eight or ten days. At the end of this time the patient will have lost the characteristic bloated appearance, the tongue will be clean, the appetite restored, the general tremors will have disappeared or greatly diminished, and the patient will be keenly desirous of regaining his liberty. It should be kept in view that his desire to regain his liberty may be entirely due to a fresh craving for stimulants ; in other instances the desire admits of a more favourable explanation.

An essential part of the later treatment consists in warning the patient judiciously as to the serious physical disease which is bound to follow to the heart, kidneys, and liver, etc.—certain symptoms present in the case forming a danger signal in these directions—if the alcoholic habit is not broken. While the prognosis is always guarded in these cases, good results are often achieved by the application of appropriate physical measures, combined with wise and tactful guidance given at the right time and in the right way.

CHAPTER IX.

DIET.

DIETARY IN FEVERS AND ACUTE INFECTIVE DISEASES.

PRINCIPLES OF FEEDING.—The following are the guiding principles in treatment :—

1. An adequate supply of albumins, carbohydrates, and gelatines must be given, to neutralise the increased combustion in the tissues resulting from the high temperature.

2. No food should be administered which cannot be readily absorbed and assimilated, for if the enfeebled digestive organs are over-loaded, the undigested food will undergo fermentative changes, which will lead to gastro-intestinal irritation. With suitable feeding, the wasting is less, the patient does not become so reduced, and, consequently, the convalescence is more rapid.

3. An abundance of fluid should be given. This overcomes the dry and parched sensation in the throat and fauces, washes out through the kidneys the waste matter produced by the increased rate of metabolism, and promotes the elimination of the toxins.

4. Food must be given in measured quantities at regular intervals, and should be daintily served.

It is specially important to attend to the toilet of the mouth in fever. Regular cleansing of the mouth and teeth with an antiseptic mouth-wash at least three or four times daily checks fermentative processes, and enables the patient to take his food to the best advantage.

Food, in all cases of pyrexia, should be administered in the fluid form, the quantity small, from three to four ounces at a time, and given at short intervals (every one-and-a-half to two-and-a-half hours) during the day. At night, if the strength is being well maintained, simple drinks to quench the thirst are all that is required ; by this arrangement the digestive organs obtain rest.

The diet must be selected from the following substances, namely :—milk, whey, eggs, meat teas, meat infusions, meat juices, meat extracts, soups, meat jellies, calf's-foot jelly, grape sugar, starches, fruit juices, fruit soup, and beverages of low nutritional value. This diet may be suitably varied by changing the flavouring substances.

MILK AND ITS DERIVATIVES.[1]—Milk is pre-eminently the diet for the febrile state. It is also the most convenient form of food, but it must be borne in mind that milk forms a solid curd when acted on by the gastric juice. On this account some persons, even in health, find milk indigestible.

If there is any doubt of the milk being thoroughly satisfactory and fresh, it should be scalded. The necessary dilution of the milk depends greatly on the digestive powers of the patient. The milk may be given hot or cold, but is best to be slightly warmed. The following methods may be adopted :—

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[1] The recipes given are taken from the Author's text-book, "Food and Feeding in Health and Disease."

(*a*) Simple dilution with boiling water, clear or thick barley-water, toast, or rice-water, in the proportion of equal parts.

(*b*) Dilution with an effervescent water—milk and Vichy or Vlas water, equal parts, or milk one part with two portions of potash, soda, or Apollinaris water. In some patients effervescent drinks set up distension of the stomach and troublesome flatulence ; this quickly subsides when the aerated water is stopped.

(*c*) Dilution and mixture with an alkali. This method is advisable if there is pain and flatulence after the simply diluted milk. The addition of ten grains of soda bicarbonate and ten grains common salt, added to equal parts of milk and water, often prevents pain and lessens the constipation. Lime-water, in proportion of one part lime-water to three parts of milk, is useful if there is pain and a tendency to diarrhœa. As to quantity, two ounces of the milk, diluted as recommended, may be given every one-and-a-half hours. If this does not disagree, the amount may be increased. Three to four pints of milk daily are readily taken by most adult patients. In most cases where a milk régime for a lengthy period is necessary, attention should be directed to the state of the stools, noting especially the presence of undigested curd.

Repugnance to milk can be overcome by modifying the flavour of the milk ; for example, tea can be infused with boiled milk, or a very weak cocoa made with Allenbury's milk cocoa can be specially recommended for this. Horlick's malted milk made with milk is very palatable. A small amount, *e.g.*, half a teaspoonful of a meat extract such as Bovril, Oxo, Lemco, or Virol, added to a cup of warm milk or milk and water, is an excellent way of varying the flavour.

(*d*) Modifications of milk.—Occasionally cases occur where diluted milk is not digested, and whey will then be found useful. It will also be found an agreeable change in the monotony of a milk diet. Whey is practically an aqueous solution of milk sugar ; it is apt to turn sour. Whey is milk minus the curd and fat, which have been got rid of by a process of coagulation and straining. Its nutritive value may be increased by the addition of strong beef-tea, raw-meat juice, egg-water, or Plasmon. Koumiss and Kephir fermented milks can sometimes be retained by an irritable stomach when everything else is rejected.

EGGS.—Eggs form another permissible food, but ought not to be allowed too freely. They may be given as a drink, either alone or in combination with milk, or may be used to fortify other nourishment. As fluid food is preferable for pyrexial patients, eggs are best administered raw. The lightest form of egg drink is an egg beaten up, added to three ounces of very hot water, strained and flavoured with vanilla essence or cinnamon, and slightly sweetened. Another form of egg drink, more stimulating and nourishing, can be given, where milk and sherry are added to the egg. Egg flip, rich or plain, is the white of egg added, when well beaten up, to milk or cream, and flavoured. A switched egg also may be added to a cup of tea or coffee. A whole egg, beaten up with three times as much water, strained, and added to light broth or clear soup, is also very nourishing. (*Caution.*—Do not add the egg to boiling soup, or it will curdle.) Albumin water, added to a clear soup or to a cup of Bovril is nourishing and very pleasant.

The patent preparation of Brand's termed "Fever food" is most nutritive; it consists of essence of beef, eggs, and cream. In appearance it resembles custard, and has a very agreeable flavour which is quite distinct from the meaty flavours of the beef juices and extracts.

MEAT INFUSIONS, JUICES, EXTRACTS, ETC.

This group of foods is largely administered, and their usefulness is universally admitted. The actual nutritive value of most of the beef-teas and clear soup is low, but a French authority has pointed out that the most suitable diet for febrile maladies is one that contains only a small quantity of albuminous matter; and it is the possession of the saline principles (chloride and sulphate of potassium, etc.), dissolved in a large amount of water, which constitutes the chief recommendation of broths and beef-teas. In the selection of a beef-tea or beef essence, it is far better to use a carefully-prepared home-made beef-tea than any of the expensive patented beef-teas and meat juices, which are purchased at great cost in the belief that they are strengthening. There are various ways in which beef-tea may be thickened, *e.g.*, with tapioca, breadcrumbs, or baked flour, thus adding considerably to its nutritive value. Where permissible the flavouring can be improved by the addition of vegetables or celery seed; or a muslin bag containing a variety of vegetables can be cooked with the beef-tea and afterwards removed.

Special attention should be given to the means of thickening the teas with tapioca, breadcrumbs, baked flour, arrowroot, oatmeal, and yolk of an egg; the last mentioned being specially pleasant to a patient who is improving. The nutritive value of the food may be greatly increased by the addition of one or more of these substances.

Vegetable flavouring can also be added by cooking vegetables with the meat and straining carefully, without in any way injuring the digestibility of the food. Proprietary beef extracts, essences, and juices may also be given, but are not so satisfactory for fever patients as well-diluted foods.

GELATINE is another important item in the diet of these cases. By itself it has not the same nutritive value as the albuminates, and in any case it is necessary to prescribe it in considerable quantities to attain the same end. Gelatine is not a tissue-builder, but it is a means of saving the albuminous waste from the tissues. From this point of view gelatine cannot be too strongly recommended. Gelatine may be administered in the form of a clear soup—"consommé"—or may be given as a meat jelly, calf's foot jelly, or as a sweet jelly.

CLEAR SOUP OR CONSOMMÉ.

1 quart of first stock.
(*This should be in the form of jelly.*)
6 ozs. lean, juicy beef.
1 lump sugar.
1 white and shell of egg.

METHOD.—Carefully remove all fat from the top of the stock, and put it into a clean-lined saucepan. Wipe the beef with a damp cloth, and shred it down finely as you would for beef-tea, removing all fat and skin. Add this to the stock, with the white of the egg and the shell well-washed and crushed. Whisk these over the fire with a wire whisk until the soup just comes to boiling-point. Then remove the whisk, and let it boil well up. Draw the pan to the side of the fire, where the soup will keep warm, but not simmer, and cover it with a plate. Let it stand there from ten to fifteen mintues. Tie a clean cloth on to the four legs of a chair turned upside down, letting it fall slightly in the middle so as to form a bag. Pour some boiling water through the cloth into a basin to thoroughly heat the cloth. Place a clean, dry basin underneath, and pour the soup gently through the cloth. The soup will not be clear the first time, so change the basin and pour the soup through again, repeating this process until the soup runs through quite clear. In repeating, add a lump of sugar, which makes the soup sparkle.

This soup can be varied by the addition of different garnishes, *e.g.* :—

CONSOMMÉ AND EGG.

1 quart consommé. 1 egg.

METHOD.—Put the clear soup into a saucepan, and bring it to the boil. Beat up the egg in a small cup or basin with a fork, and pour it slowly into the boiling soup, stirring all the time with a spoon. The egg will curdle in the soup, and look like threads of yellow.

Consommé with Custard.

1 pint clear soup.
1 yolk of egg.
¼ gill of clear soup.
Pepper and salt.

Method.—Take yolk of egg and a small portion of the white, beat up with ¼ gill of the clear soup, and season with pepper and salt, and strain into a greased egg-cup. Cover with greased paper, and steam very slowly for ten minutes, or until the custard feels firm to the touch; let it cool, and turn it out. Cut it into small dice. Put these in tureen, and pour boiling hot consommé over them.

Meat, veal, or chicken jelly can be obtained from preparing the meat and chicken, and serving cold. Also beef essence served cold makes a very nice jelly, but can only be taken in very small quantities, as it is very concentrated.

Veal Jelly.

1 lb. veal.
2 thin slices of turnip.
1 teacup of water.
Pinch of salt.

Method.—Slice the veal very thinly, and place a layer of it in a jar with a layer of thinly sliced turnip, and repeat this until all is used up; add the salt and water, cover the jar, put in a saucepan with boiling water to reach up half-way, and simmer for four hours. Strain and serve cold. It will be in a strong jelly.

Sweet jelly may be made from calves' feet or from gelatine. Calf's-foot jelly is troublesome to make, but if thoroughly well made it is much more delicate in flavour than gelatine jelly. Both methods are given.

Calf's Foot Jelly (Sweet).

1 ox foot or 2 calves' feet.	1 blade mace.
½ lb. sugar.	1 in. cinnamon stick.
4 eggs.	4 cloves.
4 lemons.	2 glasses sherry wine.

2 quarts of water.

Method.—Two calves' feet are equal to one ox foot, and make the same quantity of jelly; they are prepared in the same way as the ox foot, but need not be boiled quite so long. Get the ox foot broken across several times; split it up between the toes; take out the piece of fat between the toes and all the marrow from the bones. First blanch the foot, by thoroughly washing, cover with cold water, and bring it to the boil. Now place it in a basin of cold water, and scrape well.

After again rinsing in cold water, put it in a clean pot with two quarts of cold water, bringing it to the boil and skimming it well, and boil very gently for about eight hours. If very gently simmered by the side of the fire, the stock does not reduce too much. Strain it into a basin, either through a towel or a sieve, and stand aside to get quite cold. There should be six breakfastcupfuls of stock. When quite cold, remove all the fat from the top; this must be done very carefully.

Now put the stock into a clean saucepan, add the sugar, the flavouring broken into small pieces, the lemon rind very thinly pared off, the juice strained, two eggs and the whites of the other two eggs beaten up and a little egg-shell crushed up.

Put this on the fire and whisk briskly until it comes to boiling-point. Allow it to boil very gently about seven minutes. Withdraw from the fire, cover it with a lid, and allow it to settle for five to ten minutes.

Have a flannel or felt jelly-bag hanging up. Pour a good deal of boiling water through the bag, to warm and cleanse it. When the water has all run out, put a clean basin under the bag and pour the jelly in. Pour the jelly twice through the bag, when it should become clear and a brilliant colour. This jelly is excellent without wine.

But if wine is used, it is beaten up into the saucepan before the jelly is poured into the bag.

Wine Jelly (Sweet Wine Jelly from gelatine).

1¼ ozs. French sheet gelatine.
3 gills cold water.
½ gill lemon juice.
½ gill sherry wine.
1 tablespoonful brandy.
3 ozs. loaf sugar.
Rind of 1 lemon, cut.
2 or 3 cloves.
1 in. cinnamon stick.
White and shell of 1 egg.

The proportion of gelatine is 2 ozs. to 1 quart.

Method.—Put all the ingredients into a lined saucepan; whisk until they boil; remove to the side of the fire when the scum begins to rise to the top. Cover the top of the pan with a plate, and allow it to stand fifteen minutes. Strain through a hot jelly cloth; run through three or four times till clear, and when cold, mould in a scalded wet mould.

Whipped Jelly.

Method.—Melt the jelly by standing the basin containing it in a saucepan of hot water. When dissolved, put into a large basin; with a whisk whip it until it is quite cold, and should become a firm froth and perfectly white. By varying the ingredients in the wine jelly, a good many different forms can be obtained, *e.g.* :—

Port Wine Jelly.

Method.—Take three gills port wine, one gill water, and one tablespoonful of red-currant jelly (instead of the sherry wine) lemon juice, and the large amount of water.

Orange and Lemon Jellies.

Are made by substituting orange or lemon juice for the wine.

Farinaceous Foods containing carbohydrates in the form of starch or sugar can be given in moderation. Thin oatmeal and barley gruel carefully strained and flavoured with salt or sugar is useful. Arrowroot and Farola are also of value.

Malt extract, granulated, dissolved in warm water or milk, or with an effervescing water, is good. These supply grape sugar (maltose), soluble dextrin, and a small quantity of soluble albuminoids. Among proprietary foods, Benger's food is one of the most useful preparations, especially for cases of continued fever. Small quantities of arrowroot, ground rice, and well-baked flour can also be added to clear soup or beef-tea. Great care must be taken not to make the soup too thick.

Baked Flour.

Method.—Spread some white flour thinly on a dish, bake it in a moderate oven for about an hour, until it is a delicate colour. Take it out and place it on a sheet of kitchen paper; when cool, roll it smooth with a rolling-pin, pass it through a wire sieve, and then keep it in a canister or bottle.

Grape sugar, a kind of predigested carbohydrate, is strongly recommended, and may be added to farinaceous foods, and also be used to sweeten beverages.

Fruit juice, especially the juice of grapes and oranges, is quite admissible, and is usually much appreciated. Special stress should be laid on the point that in grapes the skins and stones are carefully removed, and in oranges that only the juice and pulp are eaten. Fruit soups are commended as agreeable and useful. They are made by boiling fresh or dried fruits with water, with or without the addition of sugar or lemon peel, and freed from the solid residue by pressing and straining.

THIRST QUENCHERS.—For thirst an abundance of refreshing drinks should be permitted. These all have a very low nutritive value. If made with barley or rice-water instead of plain water, the nutritive value is slightly increased. Again, the addition of a teaspoonful of milk, sugar, or lactose to the pint increases the value considerably without affecting the flavour. Iced water should not be forgotten as being always much appreciated by fever patients.

Rice Water.

Method.—Take two ounces of rice in an enamelled saucepan, with three pints of water, and boil for two and a half hours. Stir it frequently and skim carefully. Strain into a jug through a fine wire sieve, and rub through the glutinous parts, but not the hard portion. Add flavouring to taste.

Apple Water.

1 lb. apples. $\frac{1}{2}$ lb. brown sugar.
1 gall. boiling water.

Method.—Cut up the apples into quarters; put them into the jug with brown sugar, and pour the boiling water over it. Let it stand until cold; pulp the apples and the fluid through the colander. Bottle for use; do not cork the bottle; keep it in a cool place.

Apple Toast Water.

Method.—Toast a piece of bread slowly until it gets quite black. Place it in a jug of apple water for three-quarters of an hour, then strain it. This makes a verv nice and refreshing drink.

Apple Barley and Apple Rice Water.

Method.—Boil $\frac{1}{2}$ lb. of rice or $\frac{1}{4}$ lb. of barley, blend with the apple-water, and then strain.

In spring and summer, rhubarb, green gooseberries, black and red currants, and raspberries may all be made into nice cooling drinks, if used in the same proportions.

Imperial Drink.

½ oz. cream of tartar.
Juice of 1 lemon.
2 tablespoonfuls of sifted sugar.

Method.—Place the ingredients in a jug, pour over a quart of boiling water, and cover until cold.

Lemonade.

Juice of 1 lemon.
1 pint of water.
1 oz. of sugar.
1 egg.

Method.—Dissolve the sugar in the water; add the juice of the lemon; beat up the white of egg, and add it. (This makes a very palatable drink, with slight nutritive value.)

Lemonade (2).

4 lemons. ¼ lb. of loaf sugar. 3 pts. boiling water.

Method.—Rub some sugar on the rinds of two of the lemons until it is yellow. Strain the juice of the four lemons; put the sugar and juice into a jug, and pour it over the water. Cover it until it is cold.

Orangeade.

2 oranges.
Juice of 1 lemon.
2 or 3 lumps of sugar.
1 pint of boiling water.

Method.—Wipe the oranges with a damp cloth, and peel the rind of one of them very thinly. Put this into a jug with sugar, and strain in the orange and lemon juice. Pour on the freshly boiled water. Cover closely until cold, and then strain.

Black Currant Drink.

2 tablespoonfuls black-currant jam.
1 teaspoonful arrowroot.

Method.—Take the black-currant jam and boil it in a quart of water. Cover it and stew gently for half an hour, then strain it, and set the liquor again on the fire. Mix the arrowroot in cold water, pour over it the boiling liquor and keep stirring. Then let it get quite cold. (This is a very pleasant drink, and specially nice for an inflamed throat.)

Tea and coffee freshly made with milk may be given also as beverages with a certain food value. (These are better withheld until pyrexia is gone.) Peptonised foods are not unusually called for in fever cases. They are described on page .

STIMULANTS.—The advisability of administering or withholding stimulants depends entirely on the condition of the patient. The indications for its administration are as follows :—After a long continued pyrexia, if the circulation shows signs of failure, the pulse becoming weak and irregular ; or if the digestive powers flag, with sordes forming on the lips, with a foul tongue and loss of appetite. Hyper-pyrexia may also necessitate the use of alcohol.

Champagne, brandy, or whisky may be used ; the two latter are the best in the acute stages. It may be given in plain water, in milk, or in an effervescing water. When ordered, the exact quantity should be stated : it is best given at regular intervals by day and night. A half or one ounce every two or three hours is usually sufficient ; it is seldom necessary or advisable to give more than six ounces in twenty-four hours to an adult. A larger quantity causes over-stimulation; this can be recognised by a feeling of discomfort, a bad taste in the mouth, and an offensive breath. Children show a distinct toleration for relatively large doses of alcohol. In cases of vomiting, dry champagne is often the best form of stimulant.

DIET DURING CONVALESCENCE.

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The digestive tract being more or less weakened in all cases of acute illness, patients convalescing from an acute disease may be regarded as dyspeptics for the time being. Great care is therefore necessary in regard both to the quantity and quality of the food. The digestive capacity of convalescents, however, varies widely. There is, for instance, the healthy young adult recovering from some sharp attack of infective fever, in whom the digestive organs are only weakened, not organically affected. His convalescence is rapid, and he is soon capable of eating and digesting everything. In this class of case there is no necessity to try and tempt the appetite, and the food may be simply prepared; the danger is that the patient will over-eat. On the other hand, the patient may be a delicate child recovering from scarlatina, complicated by nephritis. Here it would be absolutely wrong if we did not limit the quantity, and give very strict injunctions as to the quality of the food. Similarly, after typhoid fever, when convalescence is established, a mass of undigested food,—*e.g.*, potatoes or a piece of unmasticated meat, may cause a relapse, by setting up irritation in some recently ulcerated patch.

At first, in all cases, fever diet should be continued, the milk and beef tea being gradually reduced, and thickened beef-teas and soups, egg drinks, and various jellies being mainly given. This can be extended to include the more easily digested starches, either in the form of some invalid food,—*e.g.*, a simple, well-cooked gruel, malted gruel, or Benger's or Savory & Moore's invalid food. The next advance would include lightly cooked eggs, either plain boiled, poached, scrambled, or in the form of a custard; or combined, as in milk puddings, with a farinaceous food. For breadstuffs, thin slices of toast, the crusty portion of a Vienna roll, sweetened and unsweetened rusks, toasted sponge finger biscuits, rice biscuits, and plain biscuits may be recommended. Many of the malted breads now on the market, such as Veda, Hovis, Bermaline, Bipsine, etc., are quite permissible, care being taken that the bread is not new.

As the strength of the patient increases a more liberal diet is given, fish, sweetbreads, chicken, game, pigeons, rabbits, being gradually added to the dietary. Then follows mince, beef quenelles, eye of a tender loin chop, a slice of tender beefsteak, or a small piece from the undercut of a lightly cooked sirloin of beef, or a slice from a leg of mutton. The patient should always be reminded of the necessity of eating slowly and masticating well. Vegetables and fruits must be cautiously added to the dietary.

The following seven days' dietary is sketched to give an indication of what is permissible. Doubtless, in some cases a more rapid return to ordinary diet could be made, while in others the change would require to be more gradually effected. This scheme of dietary is followed by an account of the manner of preparation of farinaceous and other foodstuffs of special value in convalescence.

SEVEN DAYS' DIETARY.

First Day.

7 a.m.—If awake early, a small cup of freshly-made tea, with cream.

8.30 a.m.—Milk and thick barley-water, half a slice of toast cut in fingers.

11.30 a.m.—Calf's-foot jelly, about 2 oz.
1 pint thick beef-tea (egg and tapioca grout).
A few grapes (juice and pulp only).

4 p.m.—Cup of tea, with milk and cream, thin slice of bread and butter.

6.30 p.m.—Cup of Benger's food (or other invalid food).
9 p.m.—Cup of beef-tea.

Second Day.

7 a.m.—A small cup of coffee, with milk.

8.30 a.m.—Malted gruel.

11.30 a.m.—Milk and soda-water, with plain biscuits.

1 p.m.—Beef-tea purée with strip of toast.
Blancmange.

4 p.m.—Cup of tea, with milk and cream.
One slice of bread and butter.
One sponge finger.

6.30 p.m.—Plain egg flip with biscuits.

9 p.m.—Cup of chicken soup or chicken jelly.

THIRD DAY.

7 a.m.—A small cup of freshly-made tea, with cream and small half slice of toast.

8.30 a.m.—Breakfast—Saucerful of oatmeal gruel with cream, and a little piece of Vienna roll (crusty part).

11.30 a.m.—A teacupful of beef-tea (unthickened), either hot or cold.

1 p.m.—Steamed whiting, half slice of bread.
Semolina or ground rice pudding.

4 p.m.—Potash and milk, with rice biscuit or sponge cake.
A little fruit.

6.30 p.m.—An invalid food in any form.

9 p.m.—Some variety of meat tea or infusion.

FOURTH DAY.

8 a.m.—Saucerful of hominy porridge or barley-meal gruel, etc.
A small cup of tea, toast, and a very little butter.

11.30 a.m.—A teacupful of chicken tea with milk and potash, or a little fruit.

1.30 p.m.—Baked or steamed fish.
Spinach.
Apple cream.

4 p.m.—Potash and milk, or a small cup of fresh tea, bread and butter, and sponge cake.

6.30 p.m.—Peptonised cocoa and milk, or custard.

9 p.m.—Some variety of meat infusion,—*e.g.*, veal tea.

Fifth Day.

8 a.m.—A lightly-boiled egg, toast or roll with butter.
A small cup of tea.

11.30 a.m.—Teacupful of soup, or a little fruit, and a drink of milk and potash.

1.30 p.m.—Rabbit, chicken (roast) two slices from breast, or pigeon served with bread sauce.
A small helping of vegetable marrow or cauliflower, not potatoes.
Pudding—apples cooked in water sago, eaten with cream.

6.30 p.m.—Oysters.

9 p.m.—Some variety of soup.

Sixth Day.

8 a.m.—A piece of boiled or steamed haddock, whiting, or sole.
Tea bread (plain or toasted), and butter.

11 a.m.—Soup, or egg drink.

1.30 p.m.—Sweetbread or tripe.
Vegetable, stewed tomato (pulp only).
Stewed fruit with custard.

4 p.m.—Afternoon tea (avoiding rich cakes and pastry).

6 p.m.—Poached egg on toast, or spinach.
Milk and potash.

9 p.m.—Cup of soup.

Seventh Day.

8 a.m.—A few rolls of well-fried streaky bacon.
Toast and tea.

11.30 a.m.—Egg flip, or soup, or milk and potash.
Fruit.

1.30 p.m.—A small slice of tender roast mutton, or the eye of a tender mutton chop.
Vegetable.
Jelly.

4.30 p.m.—Afternoon tea (avoiding rich cakes and pastry).

6.30 p.m.—Fish.
Milk pudding.

9 p.m.—Cup of soup.

FARINACEOUS FOODS.—The value of different farinaceous foods is often much interfered with by defective cooking. In the preparation of gruels and other farinaceous foods, prolonged boiling is required in order to burst the starch granules. The stomach can do very little with uncooked starchy food. There are now many half-cooked cereal preparations in the market which do not require such prolonged cooking.

OATMEAL GRUEL.

1 tablespoonful fine oatmeal.	½ pint cold water. Salt or sugar.

Put the oatmeal into a clean basin and pour the water over it. Cover the basin and let it stand for at least half an hour, stirring occasionally, then straining the liquid off into a small clean saucepan, pressing the oatmeal as dry as possible. Stir the strained liquid over the fire until boiling, and let it boil from fifteen to twenty minutes. The thickness of the gruel is very much a matter of taste; if too thick add more water, or if too thin use more oatmeal. Season with salt or sugar. The addition of a little cream is a great advantage, improving the taste and increasing the nutritive value.

MILK GRUEL.

1 tablespoonful fine oatmeal.	½ pint milk. Salt or sugar.

Made in the same was as last recipe, except that milk is used instead of water.

Malted Gruel.

This gruel may be made of any of the farinaceous substances—quaker oats, farina, arrowroot, barley, or lentil flour. Make in the same way as oatmeal gruel. When cold enough to swallow, add the malt infusion or an extract of malt; about one tablespoonful of the infusion or a teaspoonful of the extract is sufficient to digest a plateful of gruel. The action is very rapid, and in a few moments the gruel becomes thin from the transformation of the starch into maltose.

Barley-meal Gruel.

1 dessertspoonful barley-meal.
½ pint milk.
A small piece of butter.
Sugar or salt.

Mix the milk very gradually with the meal, stirring until quite smooth. Take a small lined saucepan, and after rinsing with cold water, pour the barley and milk into it. Stir constantly over the fire until boiling, let it boil for ten minutes, season, and serve very hot.

Port Wine Gruel.

Make a gruel with oatmeal or barley-meal and water, then thin it down with a glass of port wine; heat thoroughly, but do not boil again.

Caudle.

Beat up an egg to a froth, add a glass of sherry and half a pint of hot gruel; flavour with lemon peel, nutmeg, and sugar.

Water Arrowroot or Cornflour.

½ oz. arrowroot or cornflour.
½ pint cold water.
1 teaspoonful of sugar.
Seasoning, either nutmeg, sherry, or brandy.

Put the arrowroot into a small basin, add to it a tablespoonful of cold water, break it with a wooden spoon until quite smooth. Then pour on the rest of the water, mix well, and pour into a small lined saucepan. Stir this over the fire until it boils and thickens, then let it boil for ten minutes to thoroughly cook the arrowroot. Sweeten to taste, and serve in a cup or small basin. A little nutmeg may be grated on the top, and wine or cream added if desired.

Milk Arrowroot or Milk Cornflour.

½ oz. arrowroot or cornflour. ½ pint milk.
½ teaspoonful of sugar.

Make as above, using milk instead of water.

Water Sago or Tapioca.

½ oz. sago or tapioca.
¾ pint cold water.
Sugar, brandy, or fruit juice to taste.

Place the sago and water into an enamelled saucepan, and boil gently for an hour and a quarter, adding a little water to make up for evaporation. Skim when it comes to the boil, and stir frequently. Sweeten to taste; this may be flavoured with brandy or sherry, or may have added to it a purée of prunes with a glass of claret, or stewed apples with a few cloves.

Farinaceous or milk puddings.—In the following recipes we have boiled farinaceous foods which are further cooked by baking; eggs can be added if desired. The presence of eggs in a pudding greatly improves the flavour and appearance, but they make it richer and more difficult to digest. The essential for a good milk pudding is to have the starchy food sufficiently boiled, and the eggs lightly cooked. It is best to beat up the white of the eggs separately, as this introduces air into the pudding and causes it to rise. For flavouring, the most suitable substances are fresh lemon rind or juice, essence of vanilla, grated nutmeg, and ground cinnamon.

ARROWROOT OR CORNFLOUR PUDDING.

½ oz. arrowroot or cornflour.
½ pint milk.
1 egg.
1 teaspoonful of sugar.

Make in the same way as the arrowroot and milk, and thoroughly boil the mixture for ten minutes. Remove the pan from the fire and add the sugar and any flavouring. Separate the yolk from the white, add the yoke to the arrowroot whenever it has slightly cooled, also a pinch of salt to the white, and beat it up to a stiff froth. Stir this lightly into the mixture, and pour into a greased pie-dish, wiping round the edges of the dish. Bake in a moderate oven until well risen, and of a nice light-brown colour. Sprinkle some white sugar over it and serve at once, as it soon falls if allowed to stand.

SEMOLINA OR GROUND RICE PUDDING.

¾ oz. semolina or ground rice.
1 teaspoonful of sugar.
1 egg.
¼ pint milk.

Put the grain into a small lined saucepan, and the milk with it. Stir these over the fire with a wooden spoon until boiling, and boil for a few minutes until the semolina swells and thickens. Remove the pan from the fire, add sugar and seasoning, and when it has cooled, mix the yolk of the egg well into it. Beat up the white on a plate to a stiff froth and mix into pudding, pour into a pie-dish and bake for ten minutes, sprinkle with sugar, and serve at once.

RICE PUDDING.

1 oz. whole rice.
½ pint milk.
1 teaspoonful of sugar.
1 egg.
Flavouring as required.

Wash the rice thoroughly in water; put it into a lined saucepan with cold water to cover it; bring it to the boil, and pour the water off. This helps to burst the rice more quickly. Then pour in the milk, and let the rice simmer by the fire until quite soft; add the yolk of the egg and the white as described in the last recipe, and bake in a well-greased pie-dish.

Tapioca and Sago Pudding.

¾ oz. tapioca or sago.	1 egg.
½ pint cold milk.	1 teaspoonful of sugar.

Flavouring as preferred.

If small crushed tapioca or sago is used, the directions are the same as for semolina pudding. If not, the recipe is as follows:—

Cover the grain with milk, and soak for an hour. Rinse out into a small lined saucepan, turn the tapioca and milk into it, and stir over the fire until it comes to the boil. Then simmer slowly until it turns clear, stirring every now and then. This takes from twenty to thirty minutes. If it becomes too thick while cooking, add a little more milk. Then finish off the pudding with eggs, etc., as in semolina.

Baked Bread and Butter Pudding.

1 or 2 slices thin bread and butter.	½ pint milk.
1 teaspoonful sugar.	1 egg.

Grated nutmeg.

Cut some bread and butter rather thin, remove the crusts, and cut into pieces about an inch square. Lay these into a small greased pie-dish, making the dish just about half full ; beat up the egg in a small basin and add the nutmeg, sugar, and milk. Mix well together and pour over the bread in the pie-dish. Allow the pudding to stand about ten minutes until the bread gets thoroughly saturated, then bake in a moderate oven from ten to fifteen minutes until nicely browned on the top. Sprinkle with sugar.

Eggs may be given raw or cooked. When given alone they may be given as prairie oyster, boiled egg, poached egg, scrambled egg, or baked egg. They can be added to soups as thickenings,—*e.g.*, thick beef-tea, consommé with eggs, consommé with custard. The following recipes may be used for custards :—

Custard Sauce.

2 yolks of egg.
1 white of egg.
1 dessertspoonful sugar.
$\frac{1}{2}$ pint milk.
A few drops flavouring.

Rinse out a small lined saucepan with cold water, and put the milk into it, and let it heat over the fire. Put the yolks and white of egg into a basin with sugar, and mix them well together with a wooden spoon. Then pour the hot milk gradually on to them, stirring all the time and mixing thoroughly. Return all to the saucepan, and stir carefully over the fire until the sauce thickens. On no account must it be allowed to boil, or it may curdle. Have ready at hand a clean basin and strainer. As soon as the sauce shows signs of thickening, and it is almost boiling, remove the pan from the fire, continue stirring for a few moments, and then strain into a basin. Add flavouring to taste—lemon, vanilla, nutmeg, or cinnamon. This can be made richer by increasing the proportion of yolks to white. It can be served as a sauce, or in a custard glass, with flavouring grated on the top.

Baked Custard.

2 yolks and 1 white of egg.
1 gill of milk.
1 teaspoonful of sugar.
Flavouring.

Beat up the eggs in a basin with the sugar and flavouring ; pour in the milk and mix again ; strain the custard into a greased pie-dish. Stand the pie-dish in a Yorkshire pudding-dish with some cold water round it. Bake in a moderate oven from fifteen to twenty minutes until firm and nicely browned. A thin slice of sponge cake may be placed on the top of the custard before baking.

Omelets.

Eggs may also be advantageously used as omelets, as follows :—

For an omelet of 2 eggs, break them into a bowl, add salt and pepper, and beat them with a fork for about a minute, not longer as a rule. When the eggs are sufficiently beaten they " run " off the fork in a homogeneous liquid, without any glutinous appearance. It is not necessary to beat for several minutes, with the idea that the more the eggs are beaten the lighter the omelet. This is a great mistake, as too much beating causes eggs to lose their consistency. It is, however, better to beat too much than too little. Place the pan on the fire to warm it, put in a small piece of butter—about the size of a hazel-nut for an omelet of 2 to 3 eggs. Add the contents of the bowl when the butter steams. If this precaution is taken, the omelet will not catch, as the high temperature of the butter isolates the eggs. It is therefore a mistake to shake the eggs directly they are poured into the pan. But a second or two later, the fork must be passed round the sides of the pan to loosen the eggs, and then they are worked in all directions with the back of the fork as if they were scrambled. When they are sufficiently cooked they look in fact almost like scrambled eggs; but now the omelet is shaken on to one side of the pan, and with the fork one half is folded on to the other and slid on to the dish. The shape of the omelet is thus obtained without difficulty, and the heat of one half just finishes the cooking of the other as it rests upon it.

SWEET OMELETS.

A.—Omelet Soufflé (Sweet).

White sugar, 1 tablespoonful.
Pinch of salt.
2 eggs.
A little powdered vanilla.

Take two bowls. Put into one of them 1 teaspoonful of white sugar; into the other a pinch of salt. Break 2 eggs, separate the yolks, and drop one yolk at a time into the bowl containing the sugar; whip them well with a wooden spoon and they become creamy like a mayonnaise. Add a little powdered vanilla to another ½ teaspoonful of sugar, and mix with the yolks. Put the whites of the eggs into the bowl containing the salt, and whip into a stiff froth. Mix with the yolks as lightly as possible, and pour the contents into a buttered dish in the shape of a pyramid. Cover it with sifted sugar and leave it for three or four minutes on the side of the stove. Then put it into the oven for ten to twelve minutes, turning the dish occasionally to colour it on all sides. Make two or three incisions with a knife, and serve immediately. This omelet must be eaten as soon as it is cooked, or it loses both its shape and its delicacy.

B.—Snowball Eggs.

3 eggs.
1½ tablespoonfuls powdered white sugar.
1 pint of milk.
Rind of lemon, or vanilla.
Sugar to taste.

Place 1 pint of milk in a saucepan on the fire with the rind of a lemon or a little vanilla, and sufficient white sugar to sweeten.

Break 3 eggs, separating the white from the yolk. Put 1½ teaspoonfuls of powdered white sugar on a plate. Beat the whites of the eggs into a stiff froth, adding a small pinch of salt. When sufficiently stiff add the sugar, and mix briskly. Take a teaspoonful of this mixture and throw it into the boiling milk in the saucepan; turn it three minutes later; remove it with a skimmer and place it on a dish. Take as many spoonfuls of the white of egg as remain and cook them in a similar manner, three or four at a time. (If the white has been beaten sufficiently stiffly, when cooked each spoonful will be a compact mass.) Dress the snowballs in a pyramid dish. Pour the remainder of the milk from the saucepan into the yolks of the eggs; put this mixture into another saucepan on the fire, turn it constantly with a spoon, and let it thicken without boiling. Pass it through a strainer, and when cold pour it over the snowballs in the dish.

Savoury Omelets.

A.—Omelet with Tomatoes.

Break the eggs into a bowl, with salt and pepper; beat them for a few minutes with a fork, place the omelet pan on the fire to warm, add a lump of butter. When the butter steams pour in the eggs. Make little incisions with a fork to let the heat reach the eggs in all parts; pass a knife round the edge of the pan to prevent the eggs from "sticking"; fold one half on the other as soon as they begin to get firm, and shake the omelet on a hot dish. Pour over it a good tomato sauce.

B.—Bread Omelet.

Put 1 tablespoonful of crumbled bread into a saucepan with ½ gill of cream, salt, pepper, and nutmeg. When the bread is swollen with the cream, break 3 eggs, beat them and make an omelet.

JELLIES.—Jellies are a pleasant change to the ordinary milky foods, and are much appreciated by invalids. They may be taken with whipped cream, which increases their value as a food substance.

CALF'S-FOOT JELLY (Sweet).

1 ox foot or calf's foot.
½ lb. sugar.
4 eggs.
4 lemons.
1 blade mace.
1 inch cinnamon stick.
4 cloves.
2 glasses sherry wine.
2 quarts of water.

Two calves' feet are equal to one ox foot, and make the same quantity of jelly; they are prepared in the same way as the ox foot, but need not be boiled quite so long. Get the ox foot broken across several times; split it up between the toes; take out the piece of fat between the toes and all marrow from bones. First blanch the foot, by thoroughly washing, cover with cold water, and bring it to the boil. Now place it in a basin of cold water, and scrape well.

After again rinsing in cold water, put it on in a clean pot with 2 quarts of cold water, bringing it to the boil, skimming it well, and boil very gently for about eight hours. If very gently simmered by the side of the fire, the stock does not reduce too much. Strain it into a basin, either through a towel or sieve, and stand it aside to get quite cold. There should be six breakfastcupfuls of stock. When quite cold, remove all the fat from the top; this must be done very carefully.

Now put the stock into a clean saucepan, add the sugar, the flavouring broken into small pieces, the lemon rind very thinly pared off, the juice strained, 2 eggs and the whites of the other 2 eggs beaten up and a little egg-shell crushed up.

Put this on the fire and whisk briskly until it comes to the boiling-point. Allow it to boil very gently about seven minutes. Withdraw from the fire, cover it with a lid, and allow it to settle for five or ten minutes.

Have a flannel or felt jelly-bag hanging up. Pour a good deal of boiling water through the bag, to warm and cleanse it. When the water has all run out, put a clean basin under the bag and pour the jelly in. Pour the jelly twice through the bag, when it should become clear and of a brilliant colour. This jelly is excellent without wine. But if wine is used, it is best put into the saucepan just before the jelly is poured into the bag.

Cream Jelly or Blancmange.

1 gill of milk.
1 gill of cream.
¼ oz. isinglass.
Rind of lemon.
1 oz. sugar.

Rinse out a small saucepan and put into it the milk, isinglass, and thinly-peeled rind of half a lemon. Let this stand by the side of the fire until the isinglass is dissolved and the milk well flavoured with the lemon. Stir occasionally to prevent boiling. Add the sugar, and strain into a basin to keep back the lemon rind. Add the cream, and stir occasionally until nearly cold. If not stirred, the milk and cream will separate. Pour into a small basin, that has been rinsed out with cold water, and place in a cool position to set. Turn out and serve with a little red- or black-currant jelly.

Egg Jelly.

¼ oz. gelatine.
1 egg.
3 oz. lump sugar.
¼ pint cold water.
¼ pint orange or lemon juice.

Soak the gelatine in water for twenty minutes. Rub the sugar on the oranges to extract colour and flavour. Put the sugar, gelatine, and water into a clean saucepan, and stir it over a slow heat until quite dissolved. Then add the juice (strained), let it just get hot, remove it from the fire, have the egg ready beaten in a basin, pour the jelly over it gradually, stirring well. Let it cool, stirring a few times to let it mix thoroughly with the egg. Pour into a small basin that has been rinsed in cold water to set. Turn out and serve with a little cream.

Soups.—The following recipes are those in which the ingredients are not too rich for the digestive capacity of convalescent patients. They form a delightful change after the monotony of the beef-teas and extracts. These recipes are also useful for the dietary of the aged.

Broth—Mutton, Chicken, or Veal.

1 lb. neck or knuckle of mutton, or veal, or 1 chicken.
2 pints cold water.
1 dessertspoonful of rice.
1 teaspoonful chopped parsley.
1 teaspoonful salt.

Wipe the meat well with a damp cloth. Cut into small pieces and remove it from the bone, and take away as much fat as possible. Put meat, bones, water and salt into a clean lined pan, put on the lid, and bring it very slowly to the boil. Remove with an iron spoon all the scum that rises. Simmer slowly for four hours, skimming when necessary. When cold, remove all fat. Return it to a saucepan well washed. Allow it to cook again twenty minutes, until the rice is soft. Add the parsley at the last, and it is ready for serving.

Tapioca grout or arrowroot may be used for thickening instead of rice.

Rice Soup.

1 pint of mutton, veal, or chicken soup.
1 tablespoonful of Patna rice.
Yolk of egg.
1 tablespoonful of cream.

Strain the broth and remove all the fat from it; put it into a clean saucepan with the rice well washed, and boil till the rice is perfectly soft. Then rub all through a fine sieve, rinse out the pan, and return the soup to it. Beat up the yolk and cream with a fork, strain them into the soup, and stir carefully over the fire until thoroughly hot, but it must not be allowed to boil. Tapioca or sago may be used instead of rice to thicken with. Also three tomatoes might be boiled with the rice, and then rubbed through the sieve. This would make a tomato soup.

Rabbit Soup.

1 rabbit.
$1\frac{1}{2}$ pint cold water.
$\frac{1}{2}$ pint milk.
$\frac{1}{2}$ ounce butter.
$\frac{1}{2}$ oz. flour.
A few pieces of parsley.
1 bay leaf.
6 peppercorns.
$\frac{1}{2}$ teaspoonful of salt.

Wash and clean the rabbit well. Let it lie in salt and water for half an hour. Lift out, dry it, and cut into joints. Cut the flesh into small pieces, and chop the bones. Put all these into a saucepan with cold water, bay leaf, parsley, salt, and peppercorns. Bring to the boil and skim well. Simmer slowly from five to six hours; then strain through a fine sieve. Put the meat into a mortar; pound it well with a little liquid, and rub it through a wire sieve. Rinse out the pan; melt in the butter; add the flour, and mix smooth. Then add the sieved meat, soup, and milk, and stir until boiling. Boil for ten minutes.

Game Soup.

1 bird (grouse, pigeon, woodcock, partridge), or remains of game.
$\frac{1}{4}$ lb. lean juicy meat.
$\frac{1}{2}$ teaspoonful arrowroot.
A pinch of celery seed, pepper, and salt.
1 pint cold water.

Wipe the game and meat with a cloth; shred the meat as for beef-tea; cut the game into neat pieces. Put all these into a lined saucepan, with cold water and seasoning; bring slowly to the boil, and skim thoroughly. Allow the soup to simmer for four hours. Strain and allow to cool, and then remove the fat. Mix the arrowroot with cold water; add this to the soup. Boil for two or three minutes, until the arrowroot turns quite clear.

Fish Soup.

Small haddock or whiting, or piece of cod.
½ oz. butter.
½ oz. flour.
3 gills or 1 pint cold water.
1 gill of milk.
1 yolk of egg and ½ gill cream.
1 teaspoonful finely chopped parsley.

Wash and scrape the fish very clean; see that there is no black skin lining the inside parts. Remove the eyes. Cut the fish across into several pieces, and put them into a lined saucepan. Cover with cold water, add the salt, bring to the boil and skim. After the fish has boiled for a few minutes, lift out a few nice little pieces of fish free from skin and bone, and reserve them for serving in the soup at the end. Allow the rest to simmer from three-quarters to an hour. Then strain through a wire sieve, and rub some of the white pieces through. Rinse out the pan the soup was cooked in. Melt in the butter, add the flour, and mix these two smoothly together, being careful they do not brown. Then pour on the soup that has been sieved, and stir until boiling. Beat the yolk of egg and cream and milk together; and, when the soup is off the boil, beat these ingredients into it; then strain through a fine strainer, stirring all the time. Do not let the soup boil after the egg is added, or it will curdle. The pieces of fish that were reserved and the chopped parsley are now added.

Oyster Soup.

1 dozen oysters.
1 pint fish stock or white stock.
1 oz. butter.
1 oz. flour.
Pinch of cayenne.
1 gill cream.
1 egg.
A few drops of anchovy essence.
A squeeze of lemon juice.
White pepper and salt.

Place the oysters in a small saucepan with their liquor, bring them almost to the boil, then strain. Beard the oysters (that is, remove the piece like a fringe that encircles them), cut them in two, and put them aside for stewing in the soup. Put the beards into a saucepan with the liquor and the stock, and let them simmer for half an hour, to extract all the flavour from them. If the stock is not previously well flavoured, small pieces of the different flavouring vegetables should also be cooked in it. Strain through a fine hair sieve or piece of muslin, and rinse out the saucepan ready for use. First melt in the butter, being careful it does not brown, add to it the flour, and mix together until it is quite smooth. Pour on the stock, and stir constantly over the fire until boiling. Skim if necessary. Season to taste with a little white pepper, salt, anchovy essence, and pinch of cayenne. Beat up the yolk of egg in a basin with the cream, strain into the soup, when off the boil, stirring all the time. Place oysters in the soup tureen, pour the soup over them, and serve.

VEAL SOUP.

1 lb. veal.
1 small knuckle of veal.
6 breakfastcupfuls water.
1 tablespoonful tapioca grout.
1 gill cream.
Yolks of 2 eggs.
2 square inches of turnip.

Cut the veal up in small pieces, and break the knuckle up well. Put all on with the cold water. Bring to the boil, and skim carefully: add the turnip cut into small pieces, and boil steadily for at least five hours. Strain the soup, then add the tapioca previously soaked in cold water, and boil again for fifteen minutes, stirring frequently. Place the yolks and cream in a basin, and stir well. Gradually add the hot soup to the yolk and cream mixture, stirring constantly to prevent curdling, and season to taste.

FISH.—Raw oysters, whiting, haddock, and sole are the most easily digested members of the fish group, and as such should come first in the dietary.

Oysters aú Naturel.

Oysters.
Pepper and salt.
Cayenne.
Lemon juice.

Open the oysters carefully and serve them in their shells. Season with pepper, salt, and a pinch of cayenne. Garnish with parsley or cut lemon. Serve directly they are opened, or the flavour will be spoilt. They are best eaten with a little brown bread and butter. Oysters may be peptonised and then given, and are an excellent and easily digested food.

This is richer and not so digestible as above, but is quite suitable for many convalescent patients :—

Oysters Scalloped.

½ doz. oysters.
½ oz. butter.
Breadcrumbs.
Pepper and salt.
Lemon juice.

Put the oysters and their liquor into a small saucepan, and bring them to the boil. Remove the beards from the oysters, and strain the liquor. Grease china or well-washed oyster shells. Sprinkle into each dish a few breadcrumbs, then put in three oysters into each shell. Season to taste with pepper and salt. Pour over a little oyster liquor. Cover with more breadcrumbs. Pour some melted butter over the top. Brown in the oven or in front of the fire, and serve hot.

The white fish can be steamed and served without any sauce, or stewed in a little milk and served with a white sauce, as follows :—

White Sauce (French).

½ oz. butter.
½ oz. flour.
½ gill cream.
Pepper and salt.
Small ½ pint fish stock or seasoned milk.

Method.—Melt the butter in a lined saucepan, add the flour, and mix smoothly with a wooden spoon. Cook for four minutes over the fire, but do not brown. Draw the pan to the side of the fire. and add the stock or milk gradually, then return to the fire, and stir constantly until boiling. Add the cream and seasoning, and boil for a minute or two longer. Remove the pan from the fire before adding the lemon juice, and strain before using. More or less milk may be added according to the thickness of the sauce required. If considered too rich, the cream may be omitted.

Seasoned milk.—Put as much milk as is required into a lined saucepan, with a small piece of carrot, turnip, onion, and a few parsley stalks. Let the pan stand by the side of the fire until the milk is well seasoned, then strain and cool before using.

STEAMED FISH.

This is the lightest and simplest mode of cooking fish for an invalid.

1 filleted haddock, whiting, or sole.
A pinch of salt and white pepper.
A small piece of butter.
A squeeze of lemon juice.

Cut the fillets of fish into neat-sized pieces; grease a soup-plate or muffin-dish with a little butter, and place the fish on this. Sprinkle with a little salt and white pepper if it is allowed, and squeeze over some lemon juice, which helps to keep the fish firm and white. Cover with a piece of greased white paper, and then with a lid or basin. Place this over a pan half-full of boiling water, seeing that the plate fits well on the pan. Keep the water in the pan boiling, so that there may be plenty of steam, and cook from twenty to thirty minutes, until the fish loses its clear, transparent appearance and looks quite white. If the pieces are thick, it is better to turn them while cooking. The liquid that is on the plate when the fish is cooked is the juice from the fish, and should be served with it. Serve with a little plain cold butter and a piece of plain bread or toast.

STEWED FISH.

1 filleted fish, whiting, haddock, sole, plaice.
1 tablespoonful breadcrumbs.
1 teaspoonful chopped parsley.
1 gill milk.
1 oz. butter.
White pepper.
1 gill cold water.

Wipe the fish with a damp cloth and cut into small, neat pieces. Rinse out a lined saucepan with water, and place the pieces of fish at the foot. Sprinkle over them a little salt and white pepper, pour in the milk and water; put the lid on the pan, and let the fish cook slowly by the side of the fire until it is ready, which will be about fifteen minutes. Do not overcook, or the fish will be hard. Lift out the pieces on to the plate on which they are to be served, and keep them hot. Add the breadcrumbs and butter to the water and milk in the pan. Stir over the fire for a few minutes until the breadcrumbs swell and thicken the sauce. Sprinkle in the parsley, and then pour this sauce over the fish.

Baked Fish.

¼ lb. uncooked fish.
2 tablespoonfuls breadcrumbs.
Pepper, salt, and a little lemon juice.
1 egg.
½ gill milk.
½ oz. butter.

Grease a small pie-dish with a little of the butter. Have the fish free from skin and bone, and cut it into neat pieces. Lay half of these pieces at the foot of the pie-dish, sprinkle over them a little white pepper, salt, and a squeeze of lemon juice, and then put on a layer of breadcrumbs. Next, put in the rest of the fish, seasoning, and more crumbs. Beat up the egg in a small basin, add the milk to it, and strain this into the pie-dish. Put the rest of the butter in small pieces on the top and wipe round the edges of the pie-dish, and bake in the oven until nicely browned.

Fried Fish.

Nothing is nicer for an invalid than a really well-fried fillet of sole or small whiting, with a slice of lemon to squeeze over it.

Soles to fry.

1 sole.
A little flour.
Pepper and salt.
Egg and breadcrumbs.
Frying fat.

Skin and fillet the fish, and wipe the fillets with a damp cloth. Trim neatly and cut across in slanting direction into two or three pieces. Dip each piece in flour mixed with pepper and salt, then egg and breadcrumbs. and fry in boiling fat until well browned. Drain on kitchen paper and serve very hot. Garnish with lemon.

Small whiting and haddocks, small flounders and plaice, can be cooked whole in this way. Large flounders, plaice, and haddocks are better filleted whole.

Quenelle of Fish.

1 lb. haddock.
1 slice bread.
½ oz. butter.
1 teacupful milk.
1 teaspoonful parsley.
1 egg and 1 yolk.
Pepper and salt.

Remove the skin and bones from the haddock, and scrape it down, putting aside any part that is not white. Soak the breadcrumbs in milk, and when quite soaked, strain and place in a small saucepan with the butter, parsley, and the yolk of one egg, and stir over the fire till a thick paste is produced; mix in thoroughly a beaten-up egg, also pepper and salt. Place in a buttered shape, and steam for an hour and a half.

Meats.—Of this class of food, poultry (*e.g.*, chicken and turkey), game (*e.g.*, pheasant and partridge), tripe, sweetbreads, and rabbit are the most easily digested. They can be served in the usual manner of roasting, boiling, or stewing. Tripe and sweetbreads form most excellent dishes, and only require to be more thoroughly known to be appreciated. Beef and mutton may be served as "minced beef," "meat-juice mince," or beef quenelles, and are very digestible; mutton chops, roast leg of mutton, grilled rump-steak, require more digestive power.

A few recipes for the preparation of chicken, game, rabbits, and sweetbreads are given, and also the method of preparing and serving tripe.

BROILED CHICKEN.

1 small chicken.	1 oz. butter.

Pepper and salt.

Prepare a young chicken for roasting, split it down the back, lay it open, and take only half at a time. Rub the piece of chicken over with a little butter to keep the skin from cracking, and season with pepper and salt. Grease the gridiron and make it thoroughly hot. Lay the chicken on it with the cut side down to begin with; broil either on the top of or before a clear fire for about half an hour. When cooked lift on to a very hot plate, and rub the rest of the butter over it. Serve with rolls of bacon round it. If broiling an older fowl, it must be partially cooked first, either by boiling or roasting. It may be eaten with or without bread sauce, made as follows:—

Bread Sauce.—2 ounces breadcrumbs. ½ pint water. ½ oz. butter. 1 tablespoonful cream or milk. Salt and pepper.

Pour hot water over the breadcrumbs, cover with a plate, and when quite cool, mash it and put in a pan with the butter, cream, salt, and pepper. Mix all well together and simmer till hot.

CHICKEN SOUFFLÉ.

Breast of chicken.	½ oz. flour.
1 gill cream.	1 egg.

Pepper and salt to taste.

Skin the breast of the chicken, chop it finely, pound well in a mortar; melt the butter, and stir it into the flour with a tablespoonful of cream. Let it come to the boil, and pour over the pounded chicken, adding seasoning, pound together, and rub through a wire sieve. Switch the remaining cream until stiff, mix gently with other ingredients; butter some cups, half-fill with the mixture, cover the cups with kitchen paper, and set in stewpan half full of boiling water. Steam for fifteen minutes. Serve with white sauce. The boiling water should only come half-way up the cups while steaming.

CHICKEN OR VEAL PANADA.

$\frac{1}{4}$ lb. breast of chicken, or $\frac{1}{4}$ lb. fillet of veal.
1 tablespoonful cold water. 1 tablespoonful cream.
A pinch of salt.

Wipe the meat and cut into small pieces; free it from fat and skin. Place in a cup with a pinch of salt and cold water. Tie over it a greased white paper, and steam slowly from one to one and a half hours. Then lift it out, place the contents of the cup in a mortar, pound well, and rub through a sieve. Put the sieved mixture into a pan, add the cream, and heat thoroughly. This may be served on a piece of toast, or taken cold.

RAGÔUT OF FOWL OR RABBIT.

Take the wings and breast of a fowl or the back and legs of a rabbit, soak in hot water for five minutes, then put into a jug with salt, and mace, or peppercorns. Cover with milk, seal the jar closely, set in an oven, and bake for three hours. Take out the meat. Pour the milk into a basin to cool, so that the fat may be easily removed. Before serving, warm in a cup set in hot water, or warm a little of the meat in the milk, and serve with thin toast or water biscuits.

STEWED PARTRIDGE.

1 partridge.	1 blade mace.
$\frac{1}{2}$ oz. butter.	Lemon.
1 teaspoonful of flour.	Pepper and salt.

Cut the partridge into joints and take out the largest bones. Put the butter into a small stewpan; when it gets hot put in the best parts of the partridge and fry it very carefully, then add to this a small bit of lemon peel, a small bit of mace, and pepper and salt; add the flour and one teacupful of water, and the bones that were removed. When this all boils up, put on the lid, and let it stew slowly for three-quarters of an hour, or till tender. Take up the best parts on a dish and strain the gravy over them. All game is easily digested when cooked in this way.

Red Meats.—A slice of plain roast mutton or beef, or a lightly-grilled chop or steak, are easily digested. The following recipes will be found useful :—

Minced Beef.

½ lb. best rump-steak.
½ pint cold water.
Pepper and salt.
Snippets of toast.

Either get the butcher to mince the steak, or, after removing all the fat and connective tissue, put it through a mincing machine.

Never buy so-called mince collops from the shop for an invalid ; there is always too much fat in it.

Take a small lined stewpan ; put the minced beef into it, with half the water and the seasoning. Put the pan on the stove, and pound the meat well until it loses its raw appearance. Then add the rest of the water ; simmer gently by the fire for twenty minutes. Do not allow the meat to cook too quickly, or it becomes hard. Remove any grease that may rise on it, and serve very hot. Garnish the dish with some neat sippets of toasted bread.

Meat-juice Mince.

½ lb. best rump-steak.
1 small piece of butter.
Pepper and salt.

Take the meat and rub through the hair sieve until all the red juicy part has gone through ; scrape the bottom of the sieve. Melt a very little piece of the butter in a small frying pan ; toss the meat juice in it for three or four minutes, until it loses its red colour. Flavour, and serve with toast. This looks just like mince, but as none of the fibre is present, it is very digestible. This meat-juice can be made more easily digestible by omitting the butter, and adopting the following method :—

Take the scraped meat, and add a teaspoonful of beef-tea or simple stock, and stir in an iron pan for three or four minutes, when the juice granulates and becomes brown in colour. If an enamel pan is used, the meat has a very unappetising appearance.

BEEF QUENELLES.

1 lb. beefsteak.	Salt and pepper to taste.
Breadcrumbs.	1 egg.

2 tablespoonfuls stock.

Pound the beefsteak, half a teacupful of breadcrumbs, salt and pepper, egg, and stock well in a mortar, rub through a sieve, shape with tablespoons, and poach in shallow pan for ten minutes in boiling water. Serve with sippets of toast, and pour a gravy made of thickened beef-tea round the quenelles.

TRIPE.—Methods of preparing.—The best varieties of tripe are those known as the "blanket" (because it has a folded appearance), and the dark variety known as the "monk's hood"; these are best for invalids on account of their tenderness. The other sorts are known as the "book" and the "honeycomb."

If tripe is properly prepared, it is a most delicately-flavoured and easily digested article of food, and should be in more constant use than it is at present. It requires, however, very careful cleaning and boiling. In Scotland prepared tripe cannot be purchased at the butcher's, so it is necessary to understand the whole process. Tripe sold in England has generally had a preliminary boiling.

First wash and scrub in several waters and scrape it with a knife, pulling away any pieces of fat from it. Cut it into pieces and put it into a clean saucepan with cold water to cover it, and bring it to the boil. This is called blanching, and is repeated until the water in which the tripe was boiled loses all its heavy smell. This may require to be done four or five times. Then rinse the saucepan well, put in the tripe with cold water to cover it, bring to the boil, and cook slowly for ten to twelve hours. If cooked too quickly the tripe will harden. When sufficiently cooked, it ought to be so tender that it will pull easily to pieces. Pour it out into a basin and cover it with the liquor in which it was cooked. This prevents it from becoming hard and dry. It can then be made up in any way desired.

The water in which the tripe was boiled should never be thrown away, as it contains a certain amount of nourishment. It is sometimes served as an invalid jelly.

The prepared tripe can be stewed in various sauces for fifteen minutes, and served in one of the following ways :—

1. Tripe stewed in white sauce and onions, and served with snippets of toast.

2. Tripe stewed in a thick tomato sauce, and served with little rolls of bacon and croquettes of fried bread.

3. Tripe heated in a good curry sauce, and served with a border of rice.

4. Baked tripe.—Grease a small pie-dish, and put the tripe, with thin square pieces of bread and butter, into this, in alternate layers. The last layer should be bread, with the buttered side up. Beat up an egg in a basin until it is frothy, add to it half a gill of tripe liquor, and season with pepper and salt. Strain this into the pie-dish, and then wipe round the edge of the dish with a cloth. Let the mixture stand for ten minutes, until it gets thoroughly soaked. Bake in a moderate oven for about fifteen minutes until nicely browned. Serve hot.

SWEETBREADS.—There are two varieties of sweetbread—the " throat " sweetbread (thymus gland), and the " stomach " sweetbread (pancreas). The latter is much more digestible. Lambs' sweetbreads are very tender. This article of food must be nicely prepared, or it is very unappetising. The difficulty is to clear off all the connective tissue and fat between the lobules.

Soak the sweetbread in cold water for one or two hours. Then put it into a saucepan with cold water to cover it. Bring to the boil, and boil for five minutes. Then lift it out and place in a basin of cold water to cool it. This preserves the colour of the sweetbread. Then, with great care, remove from it all the fat and skin, pulling them off with the fingers. It is now ready for cooking.

Braised Sweetbreads.

Prepare the sweetbreads as above. Braise them for one and a half hours—that is, place the sweetbreads unbroken into a saucepan containing a little onion, carrot, turnip, celery, savoury herbs, and seasoning; add a little meat stock, just enough to cover the meat; cover with paper and a well-fitting lid. At the end of the time take them out, brown in the oven, and serve on a piece of fried toast or a bed of mashed potatoes. Pour a good sauce round them, such as Italienne, made as follows:—

Sauce Italienne.

1 oz. flour.
1 oz. butter,
1 bay leaf.
Onion and sprig parsley.
1 gill sherry.
½ pint second stock.

Melt the butter; fry the herbs and onions and flour to a good brown colour. Add the sherry, and allow it to cook a few minutes; add the stock when boiling, and allow to simmer for an hour. Strain the sauce before pouring round the sweetbreads.

Stewed Sweetbreads.

1 stomach sweetbread.
1 gill white stock.
1 teaspoonful arrowroot.
1 tablespoonful cream.
White pepper and salt.

Break the prepared sweetbread into small pieces of equal size; put them into a small lined stewpan with the stock; put on the lid, and allow it to simmer slowly until tender.

When cooked, lift the pieces of sweetbread out, place them on a neat square of toast on a hot dish, and keep them warm. Break the arrowroot into a small basin with a little cold water, and add it to the stock in the pan. Stir over the fire until boiling, and boil for five minutes, so as to cook the arrowroot. Add cream, and season to taste. Pour the sauce over the sweetbread, and serve very hot.

VEGETABLES.—The following are the most suitable vegetables for convalescent patients: spinach, boiled lettuce, baked tomatoes, steamed asparagus, stewed celery, seakale, young leeks, cauliflower, onions, and vegetable marrow. All these vegetables can be served with a little well-made white sauce round them.

RICE AND MACARONI.—These carbo-hydrates are the basis of many nourishing and easily digested Italian dishes. In cooking, the directions for boiling rice and macaroni should be closely followed.

PLAIN BOILED RICE.

Wash well some Patna rice in several waters until the last water looks quite clean. If there is a pot for steaming the rice in, it is best to use it, but if not, boil the rice in a saucepan of boiling water containing salt, which is in the proportion of one teaspoonful to the quart. Boil quickly with the lid off, stirring frequently with a fork to prevent it sticking to the pan. Cook from ten to fifteen minutes until the grain will rub down easily when one is tested between the finger and thumb. Strain through sieve or strainer, and finish the cooking by drying it—either by putting it into the saucepan by the side of the fire, or putting it on to a plate in a moderate oven. While drying, stir lightly with a fork every now and then to keep the grains separate.

N. B.—The water in which the rice has been boiled contains the best part of the rice, so that it should not be thrown away, but kept for the stock pot.

ITALIAN RICE (Cheese and Rice).

Plain boil the rice as directed above. After straining the rice, pour it back into the pan. Put a sufficient quantity of butter into a frying pan; when the butter is melted add the rice, and mix well together for two or three minutes. Place the rice in a dish, and cover with grated Parmesan cheese.

MILAN RICE (Rice with Meat Extract).

Place a bit of butter in a saucepan; when melted, throw in the rice (2 oz. is sufficient for one person). Mix rapidly with a wooden spoon to prevent burning. When the rice begins to colour, moisten with good stock, by degrees, until it is thoroughly cooked. Then add a small teaspoonful of any meat extract. Mix with it salt, pepper, and grated Parmesan cheese, about 1 oz. A little of the cheese is mixed with the rice and the remainder served separately.

BOILED MACARONI.

Break the macaroni into short lengths, and throw it into a saucepan of freshly boiling water with salt in it.

Boil quickly with the lid off the pan until it has thoroughly swelled and is tender. Stir occasionally, to prevent it sticking. The time depends on the variety of the macaroni—the large pipe will take about half an hour, the small much longer. Keep it well covered with water. When ready, drain, and this may either be served plain with meat, or it may be put back into the saucepan with enough stock to cover it and allowed to stew for half an hour.

The pulp of a fresh tomato rubbed through a sieve may also be added to this.

DIET IN AUTO-INTOXICATION.

Intestinal Fermentation and Putrefaction.

Intestinal auto-intoxication is a toxæmia resulting from the absorption of abnormal food products under the influence of bacterial action. Intestinal auto-intoxication is responsible for a group of miscellaneous toxæmias which include cases of anæmia, headache, neuralgia, neuritis, arterio-sclerosis, rheumatism, neurasthenia, and other conditions. Some symptoms are in part mechanical, due to pressure from gas. The toxins may frequently be recognised in the stomach contents (various organic acids), in the urine (excess of ethereal sulphates), and in the breath (acetone and hydrogen sulphide gas). Alcoholic fermentation of the food-stuffs may also occur. The bowels are frequently constipated, and the motions may be ill-formed and very offensive in character. The toxic products, produced as a result of fermentation of carbohydrate foods, are chiefly CO_2 and various organic acids, such as lactic acid, acetic acid, butyric acid, and to a less extent formic and valerianic acid and acetone. The end-products of decomposition of carbohydrate foods are CO_2 and water, and no fermentation products are recovered from the urine with the exception of oxalic acid in oxaluria. The toxic products, arising from the abnormal decomposition of proteins under the influence of bacterial action, are various nitrogen and sulphur compounds, chiefly of the aromatic series, *e.g.*, indol, phenol, skatol, and hydrogen sulphide gas. Other less important products are neurin, lecithin, and cystin. The excess of nitrogen and sulphur in these putrefactive products are eliminated in the urine as ethereal sulphates, and their presence may be detected in the urine.

The dietetic treatment of cases of auto-intoxication is of the first importance. The *fermentation cases* should be treated with a diet chiefly protein in character. The diet should comprise various meat soups, fish, chicken, eggs, tripe, sweetbread, and scraped beef; farinaceous foods being restricted to dry toast, stale bread, and rusks. The diet must be carefully planned, the food given at regular intervals, and no food of any kind given between meals. The free use of plain water or other diluent should be encouraged. It is necessary to point out the importance of proper attention being paid to mastication of the food, to the state of the teeth, and the careful regulation of the bowels as essential points in the treatment. A special value attaches to the use of soured milk and of various lactic acid bacilli in many cases.

The following dietary is appropriate to cases of auto-intoxication resulting from the abnormal fermentation of carbohydrate foods :—

7 a.m.—Tumblerful of hot water.

8 a.m.—Breakfast—

Tea, one cup without sugar, and milk, not cream.

Good helping of fried bacon or fish, or eggs (plain, poached, or scrambled); or cold ham, cold tongue, or grilled kidney.

One slice of thin crisp toast, with a very little butter.

11 a.m.—One tumblerful of soured milk, with plain sweet biscuit.

1 p.m.—Lunch—

(*a*) Fish, chicken, or game; or chop, steak, or roast beef or mutton.

(*b*) Biscuits, or dry roll with cheese and butter; cup of coffee.

4.30 p.m.—Cup of soured milk, and half-slice sponge cake or biscuit.

7 p.m.—Dinner—

Clear soup, unthickened.

Meat as at lunch, without vegetables; dry toast, and a simple gravy.

Pudding in form of custard, curds, jelly, cream, or stewed fruit, without added sugar; no coffee.

10 p.m.—Drink of hot water.

The *putrefactive cases* are treated with a lacto-vegetarian diet. Meat, and especially red meats, are for the time cut off from the dietary. Meat soups are similarly withheld. Eggs are also excluded. The diet should comprise bread and milk, farinaceous foods, green vegetables, and fruits. An appropriate diet sheet is here given:—

7.30 a.m.—Tumblerful of hot water.

8 a.m.—Breakfast—

Cereal, *e.g.*, porridge, hominy, Quaker oats, with cream.

Toast or roll with butter, and a little marmalade if desired.

One cup of tea.

11 a.m.—One glass of soured milk with biscuits.

1 p.m.—Lunch—

Egg in some form, vegetable savoury, *e.g.*, cauliflower au gratin, macaroni cheese, tomato savoury.

Plain milk pudding with cream.

4 p.m.—One cup of soured milk, with piece of sponge cake.

7 p.m.—Dinner—

Vegetable or milk stock soup—*e.g.*, tomato, artichoke, potato, lentil, or onion.

Fish occasionally, or egg in some form if not taken at lunch, or vegetable savoury.

Pudding—simple pudding, or stewed fruit; no savouries and no coffee.

10 p.m.—Tumblerful of hot water.

FOODS FORBIDDEN IN ALL CASES.—Patients who are specially prone to intestinal auto-intoxication have a relatively weak digestive power. Their diet must therefore be a simple one. All foods which are difficult to digest should be excluded from the dietary, and the various "extras," which can be indulged in with impunity by healthy subjects, must be rigorously withheld. The following articles should only be given in the most restricted amounts: marmalade, jams, sugar, sweets, and confectionery; pastry, sweet cakes, new bread, and hot rolls; made-up dishes of all kinds, and all canned foods; pickles, sauces, spices, caviare, and rich gravies, lobsters, mushrooms, shrimps, sardines, salmon, mackerel, raisins, nuts, pears, and all preserved fruits.

It should be clearly understood that in all cases of suspected auto-intoxication accurate diagnosis is the first essential. This involves careful investigation of the whole gastro intestinal tract by modern methods, and also a thorough examination of the genito-urinary system. There is no use treating a patient by "diet" and other medical means if operative or other measures are indicated.

DIET IN CHRONIC HEART DISEASE.

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The diet for patients with chronic organic heart disease usually requires more or less careful regulation, even before compensation is lost, for digestion is always more or less handicapped by the heart lesion, with its resulting venous stasis in the liver and other parts of the alimentary tract. After compensation is lost, the question of diet certainly becomes one of the most important factors in the treatment. The gaseously distended abdomen may press up the diaphragm and impede the already embarrassed respiration, thus occasioning great discomfort and restlessness. These symptoms can be greatly lessened and often entirely relieved by a carefully restricted and judiciously arranged dietary. The diet must be regulated to suit the condition of the patient and his special circumstances. General principles applicable to all cases are as follows :—

General Directions—

1. The meals should be small in amount. More should never be taken than the patient can easily digest. Over-distension of the stomach from food mechanically pushes up the diaphragm and displaces the heart, causing palpitation and dyspnœa. In addition, if the meals are too large, the residue of undigested food in the intestine ferments and causes flatulence.

2. The meals should be simple, and well cooked. A simple diet (*i.e.*, not too large a variety of courses) throws less strain on the digestive functions, and also greatly diminishes the risk of eating to excess. Improperly prepared food is a cause of indigestion, and may itself produce flatulence and discomfort.

3. Long intervals between the meals should be ordered, and eating between meals should be strictly prohibited, as even a small portion of food taken while digestion is in progress may give rise to flatulence. The object of this restriction is to permit the stomach to have time to get rid of one meal completely before it is again filled.

4. Three meals of about equal size should be taken in the twenty-four hours. The midday meal can be the richest, but the total bulk should be about the same in each.

5. The meals should be taken as dry as possible. This lessens the distension of the stomach, and does not over-dilute the gastric juice; further, fluid ingested tends to dilate the vessels, to raise arterial tension, and to increase the work of the heart. Fluid need not be restricted to a very small amount unless special indications arise, but it should be taken mainly between meals and sipped slowly. Weak tea or coffee can be taken in small amount with breakfast, and alone for afternoon tea.

DIET IN CASES OF FULL COMPENSATION.—In a general way, it may be said that, in all cases in which compensation is satisfactorily established, a diet of plainly-prepared food, unencumbered by too many detailed restrictions, is best, but a few hints may be here given as to foodstuffs.

All highly seasoned food and condiments are better omitted, as they tempt the appetite more than is necessary. Stews and badly-fried foods are apt to cause derangement of the digestion.

It will also be found advisable to restrict the carbohydrates, especially the starches and sugars; they need not be strictly cut off, unless causing fermentation and flatulence. Toast, dry bread, rolls, biscuits, may be taken, but should never be eaten warm. Lightly made and well-cooked milk puddings can be taken, but pastry and suet puddings are not suitable. Of the vegetables, potatoes (not new), cauliflower, spinach, vegetable marrow and cucumber, stewed tomatoes (the pulp only), boiled onions, stewed celery, asparagus tops, are all easily digested. The root vegetables and stalks of the green vegetables above mentioned should be avoided.

Alcohol is not necessary in the early stages of heart disease, and if later indicated on account of marked failure of compensation, small doses of good whisky or good old brandy may be given in measured quantity twice daily. Wine and beer are better withheld.

Diet in cases of fair compensation.—The following dietary is suitable for a case of chronic heart disease in an adult subject, when the compensation is not seriously disturbed.:—

8.30 a.m.—Breakfast—
Cup of tea or coffee (one cup).
Fish, egg (with or without bacon), ham, tongue, or grilled kidney.
Two half-slices of toast and a roll, with butter; or,
A half-slice of toast, oatcake, or crisp rusk, with butter.

1.30 p.m.—Lunch—Alternative meals.

Fish and potato.
Fruit, with cream.
Cheese and biscuits.
Small cup of coffee.

Chicken and bread sauce and cauliflower.
Custard.
Cheese savoury.
Small cup of coffee.

Chop or steak.
Jelly or cream.
Fresh fruit.
Small cup of coffee.

4 p.m.—A cup of tea (nothing solid to take with it).

7 p.m.—A three-course dinner, much the same as given for lunch.

Diet rules for failure of compensation.—With failing compensation there arises various digestive disorders. Loss of appetite, flatulence, constipation, are the subjective indications which result from the congested state of the liver, stomach, and bowels which are now present. In later stages, albuminuria develops from the venous congestion of the kidneys, and the tissues may now become œdematous or water-logged, from the interference to the free return of blood to the heart.

The general directions already given should be closely adhered to. The diet varies according to the degree of severity of the heart failure. The diet appropriate to cases of moderate severity will first be discussed.

The patient, although ill, is not suffering from fever, and there is no necessity to place him upon a fluid diet given at short intervals. It is best to follow his usual habit, and continue having three meals a day. These should be, as before stated, small in amount, simple in character, well cooked and nutritive, and arranged at sufficient intervals to permit of complete removal of one meal from the stomach before the entrance of the next into it. In addition, the meals should be as dry as possible ; soup in these cases is better avoided.

Breakfast is generally the best meal, as after the long rest there is more digestive capacity ; so with this meal a large cup of tea or coffee may be permitted, and a little carbohydrate food-stuff. Chinese tea, apparently, is much better for a feeble digestion than that of India or Ceylon, and should, where available, be taken.

There is no need to give a tumbler of milk, cup of Bovril, or other food at 11 o'clock. It is better to let the patient sip slowly a glass of water about an hour before the next meal is due, at 1 or 2 o'clock. The midday meal should consist of a chop or fish or fowl, with some carefully prepared green vegetable, cooked with plenty of butter, and rubbed through a sieve. A second course of stewed fruit, sweetened with saxin, and eaten with cream junket, custard (baked or boiled), apple cream, lemon sponge, milk blancmange, or jelly with cream. Creams flavoured in different ways are allowable. No pudding containing starch is to be allowed. A little cheese, eaten with butter, but no bread or biscuit, should be taken. Half an ounce of brandy or whisky may be allowed with the midday and evening meals.

At 5 o'clock a cup of Chinese tea, unsweetened, or with saxin, may be drunk, but no breadstuff should be taken with it.

At 7 or 7.30 the evening meal should generally be a repetition of the midday one, but it is best to take chop or other red meat only at one of the meals. The vegetables mentioned above are allowable A second course may be permitted, and may be followed by cheese, as before, if this agrees. A glass of whisky or brandy in half a tumbler of hot water, or a small half-pint of beef tea, chicken tea, or good consommé may be taken after 10.30, but no breadstuff of any kind should be used along with it.

Three small meals will usually be ample for a cardiac sufferer; there is no question that any laxity from this diet will speedily show itself by increased flatulence.

Those patients who have been in the habit of taking dinner and high tea must give up the custom. It is very difficult to make them understand that the midday and evening meal should be very much the same in quality and quantity.

An illustrative diet sheet is here given :—

8 to 8.30—Breakfast—

One large cup of Chinese tea, with plenty of milk and cream.

Thin crisp toast made from "pan loaf," or Veda bread with butter and a little marmalade.

One of the following :—

Bacon (fat, crisply cooked), or fish (steamed or fried or rizzard) ; egg, plain-boiled, scrambled, or poached ; tongue, or potted meat.

Midday meal and evening meal—

Choice from—

1. Fish, rabbit, fowl, game, raw-beef mince, steak, chop, slice of roast beef or mutton (hot or cold).
2. Vegetable : One selected from the following :—
   Greens—*e.g.*, cabbage, lettuce, spinach, sprouts—boiled, rubbed through sieve, and heated in butter.
   Vegetable marrow or cucumber (stewed).
   Cauliflower and asparagus (tops only).
   Celery (stewed).
   Onions (Portugal)—long stewing.
3. Sweet—Stewed fruit, neutralised with soda bicarbonate, or soufflé sweetened with saxin.
   Roast apples, apple cream.
   Custards (boiled or baked), with cream.
   Junket, jelly creams.
4. Cheese—eaten with butter or cooked with eggs, if found to be digested.
   Half a glass of whisky or brandy, with four ounces of alkaline water.

Evening meal—A choice from 1 and 3 in the above midday meal. Two courses only to be taken. White meat in place of red meat should be taken once a day at the midday or evening meal. No cheese.

DIET FOR FAILURE OF COMPENSATION—ADVANCED DEGREE.—The feeding of the patient suffering from severe dilatation of the heart is often a very difficult matter. The liver is in a state of congestion, and unable to do its usual share in the digestive processes ; the stomach is in a condition of catarrh, which has induced complete loss of appetite, and often sickness and vomiting. In these circumstances it is sometimes advisable to give the stomach complete rest for forty-eight hours, and feed the patient entirely by the bowel. In most cases the diet subsequently must for a time be entirely a fluid one, and should comprise milk (plain or peptonised), koumiss, Kephir, various meat preparations, and invalid foods.

The following dietary is given, so as to indicate the amount of food and the variety of foodstuffs that may be recommended in these severe cases. The total nutritive value of this diet is small, but in many cases it is as much as the patient can possibly take for a week or two or more of his illness. In a few cases patients cannot even take as much as is given in this diet sheet, the amount of fluid that can be taken being about one-half of that indicated in this régime. In all of these cases stimulants are advisable, preferably in the form of best quality whisky or brandy.

6 a.m.—Milk (peptonised), 2 oz.
8 a.m.—Beef juice, two teaspoonfuls in a little aerated water.
10 a.m.—White wine whey, 2 oz.; or koumiss, 2 oz.
12 a.m.—Allenbury food, 3 oz.
2 p.m.—Beef juice, two teaspoonfuls, either given alone, or in a little brandy and water.
4 p.m.—Milk (peptonised), 2 oz.
6 p.m.—A few teaspoonfuls of chicken jelly.
8 p.m.—Albumin water and milk, 1 oz. of each; or albumin water and koumiss.
10 p.m.—Allenbury food, 3 oz., and brandy.
12 p.m.—Beef juice.
1 a.m.—Milk (peptonised), and brandy.
3.30 a.m.—Chicken jelly, a few teaspoonfuls.

HOSPITAL DIETARIES.

The American authors, Friedenwald and Ruhrah, in their text-book on dietetics, point out that in many hospitals the diet for patients is selected by the nurses, with the exception of a few of the more important diseases, such as typhoid fever, diabetes, and the like. There is some reason for thinking that the same remark may also be applied to some hospitals in this country. An efficient remedy for this state of affairs will not perhaps be found until instruction in dietetics is made an essential part of the medical student's curriculum.

At the present time it is found that in many institutions, where the official dietary leaves little or nothing to be desired, the actual dietary is in a manner faulty. Use and wont has led to the establishment of an increased number of feeding hours, with a proportionate increase in the total amount of food, some of which there is good reason to believe is injurious rather than beneficial. A concrete example of this is given in the table on the next page which gives the official dietary of a large infirmary, and, for comparison, the actual dietary in vogue in the same institution.

This official dietary allows for three good meals a day, which is ample for the majority of patients. Use and wont, however, has led to the following dietary being adopted as the average one for ordinary convalescent diet in that institution :—

	Full or Ordinary Diet.	Convalescent Diet.	Beef-Tea Diet.	Milk Diet.
Breakfast.	Coffee or tea. Butter, ½ oz. Bread, 6 oz. Porridge and ½ pint milk, if desired.	As ordinary.	Tea. Bread, 4 oz. Butter, ½ oz.	Milk, 1 pint. Bread, 4 oz.
Dinner.	Meat, boiled or roast, 8 oz. Vegetables, 12 oz. Bread, 4 oz. Soup. (Farinaceous or suet pudding once a week in lieu of soup.)	Fish, 8 oz. or chicken, 6 oz. (roast, boiled or stewed); or Mince collops, 6 oz. or Mutton cutlets; or Tripe, if desired. Vegetables, 8 oz. Bread, 4 oz. Soup.	Beef-tea, or chicken broth. Farinaceous pudding (custard occasionally). Bread, 6 oz.	Milk, 1 pint. Rice, sago, arrowroot, cornflour, etc., 2 oz. Bread, 6 oz.
Tea.	Tea. Bread, 6 oz. Butter, ½ oz.	As ordinary.	As breakfast.	As breakfast. Sago, or arrowroot, 1 oz. in addition, if desired.

Note.—When meat is boiled, a portion of the vegetables to be used for the soup; no extras to be given with the two first diets, except stimulants. Half a pint of sweet milk, with a slice of bread for lunch, to every patient requiring it.

For the purpose of comparison, the official and actual dietaries are here given side by side :—

OFFICIAL DIETARY.	ACTUAL DIETARY.
	5 a.m.—Morning Snack— Consisting of milk, 8 oz. ; or beef-tea, 8 oz. ; bread and butter, 2 to 3 oz.
8 a.m.—Breakfast— Coffee or tea. Butter, ½ oz. ; Bread, 6 oz. Porridge and ½ pint of milk, if desired.	8 a.m.—Breakfast— As laid down on chart.
	10 to 11 a.m.—Lunch— Milk, 8 to 10 ozs. Bread and butter, 2 to 3 oz.
1.30 p.m.—Dinner— Meat, boiled or roast, 8 oz. Vegetables, 12 oz. Bread, 4 oz. Soup. (Farinaceous or suet pudding once a week in lieu of soup.)	1.30 p.m.—Dinner— Consisting of soup, meat, and pudding. (Patients on convalescent diet get white meat.)
4.30 p.m.—Tea— Tea. Bread, 6 oz. Butter, ½ oz.	4.30 p.m.—Tea— Tea. Bread and butter, 3 to 6 oz. An egg.
	7 p.m.—Supper. Milk, 6 to 10 ozs. Bread and butter, 1½ to 2 oz.

In this actual dietary there is no restriction to the amount of bread, the amount being regulated solely by the patient's desires. This régime is one which is for many patients undoubtedly excessive. It is true that there are some patients who thrive on it, and increase in weight in a favourable manner. These are, however, in a minority, and are unsually patients who have been underfed prior to admission to hospital. For the majority of patients this diet is excessive. It gives little rest to the digestive organs, and such a diet is certainly not one to be adopted as a regular routine.

There is no doubt that too much food is often given to hospital patients by over-zealous nurses who are anxious to hasten convalescence. The desire to feed is a kindly feminine instinct which should be carefully regulated by the practitioner. The medical man should always explicitly indicate the nature and the amount of food, and the frequency of administration which he considers advisable for each patient.

A useful way of classifying hospital dietaries is the following :—

1. A Milk Diet, consisting of 4 to 6 pints of milk daily, and nothing else. This may be given in the form of diluted milk, whey, skimmed milk, or koumiss. It is best administered in six meals in the twenty-four hours.

2. A Fluid Diet, consisting of milk, beef-tea, chicken broth, mutton broth, egg albumin. The milk or beef-tea may be thickened with one of the pre-digested invalid foods, six meals daily being given.

3. A Light or Convalescent Diet, consisting of light, nutritive, and the more easily digested food-stuffs—*e.g.*, milk, fish, chicken, tripe, bread, invalid foods, milk puddings, and stewed fruits ; green vegetables, red meats, pastry, rich sauces, etc., are withheld. An illustrative dietary is here given.

Breakfast—Milk, flavoured with tea or coffee.
Bread and butter, or toast and butter.
Gruel, hominy, or farina; or lightly-cooked egg or steamed fish.

Dinner— Soup; meat- or chicken-tea or broth, thickened with barley or rice. Dry bread or toast.
Fish or chicken.
Pudding made from invalid food; or well-made milk pudding; or stewed fruit—apples, prunes, rhubarb, or gooseberries or plums passed through a sieve.

Tea— Milk, flavoured with tea.
Rusk, or sponge biscuit.

Supper— A cupful of gruel; or malted gruel; or invalid food; or chicken-tea thickened, with a slice of toast.

4. Lacto-vegetarian or Farinaceous Diet, from which animal food, with the exception of milk and butter, are excluded.

5. Protein or Nitrogenous Diet, from which starchy and saccharine foods are very largely excluded, consisting mainly of meats, fish, egg, with a specified small amount of starchy foods in the form of dried bread, toast, or rusks, arranged as follows:—

Breakfast—Tea or coffee.
One slice of toast with butter, and Kalari biscuit.
Eggs, bacon, ham, tongue, or fish.

Dinner— Soup from meat stock, crisp toast or rusk.
Fish, fowl, game, meat with cauliflower, spinach, lettuce, celery, or tomato.
Curds, custard, jelly, soufflé, or stewed fruit.

Supper— Repetition of dinner, two courses being taken.

6. Ordinary or House Diet, as in hospital diet, p. 289.

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